December 18, 1978
Mahabalipuram

SEE NOTEBOOK Dec. 13, 1978

Arrived region yesterday afternoon. Drove from Madras to Mahabalipuram ca. 3:45-4:30 pm. Beautiful clear day with wind coming off sea. Countryside generally flat. Low sandy dunes (with grass and casuarinas) by sea. Rice fields generally further inland.

Lots of coraciiformes. Especially on telephone and electric lines. 2 species predominant: White-throated Kingfisher, "White-throat", (Halcyon smyrnensis); and Indian Roller, "Ind", (Coracias benghalensis).

Both congregated in open areas. General effect like road to Ossonye in Casamance.

White-throat may well be playing roller-like role.

Watched a single White-throat in garden of hotel this morning ca. 10:00-11:00 a.m. Perched in trellis to start up. Looking down at tank very intent & presumably for fish. Makes many short series of Headbobs. Allegedly Violet-ear-blue. Occ flies down to tank, but brakes at last moment. Flies back to perch. Sits. Headbobs. Sits. Then flies down to grass 25 ft away. Catches something? Then flies away.

NOTE: There are single Hoopoes about. Apparently solitary. Also lots of Turdoides (presumably striatus) in groups. Apparently unmixed.

Start walk 2:15 p.m. Weather a little cloudier than yesterday. See single bee eater (green below) on telephone wire by grassfield. Disappears. A few minutes later, see single White-throat in almost same spot. 2:30 p.m. Single Hoopoe feeding on ground grassfield. Silent. Alone

2:35. See pair bee-eaters. Apparently Merops orientalis (Red throat bright blue). Perched on little stumps and rocks. Only a few inches up. And feeding on ground itself. No aerial sallies

Further on, see more Green Beeeaters. All low. But some of these are making low-sallies. Successfully, in at least one case

White-throat perched in low bush by river bed. Another on telephone wire 100 m. away. Very sedate and solentary

NOTE: There are lots of Fork-tailed Drongos (common species) around here. Must provide intense competition for Coraciiformes. As far as I can tell, these drongos are single and alone.

3:02. See single Ind on wire. Ignores nearby drongo. Then flies down to ground. Apparently catches something (insect?). Flies off to distant bush

Another Ind. on ground, bare sand, 100 m. further on

Many more Green Bee-eaters and Inds. along road. Inds. single or, perhaps, in loose (far apart) pairs. Bee-eaters single and/or in loose flocks.

See single White-throat catch something from pond.!

Keep on walking until 4:30 p.m. Seeing more and more individuals of the same species. Not doing anything very much. Apparently, this is full non-breeding season!

COMMENT: I wonder why there are few or no hornbills here? The habitat looks as if it should hold lots of food for Tockus spp. Are nesting sites in short supply? (There are lots of palms around here. Some Locos. Lots of Borassus-like types — probably not the same palm as in Africa. But perhaps none of these is suitable for excavation.

I am also surprised that we have not seen any Coryle. Perhaps the country side is too flat to provide steep banks for nesting?

December 19, 1978
Mahabalipuram

Wake up 6:00 a.m. Sun just appearing. Sky partly cloudy. Not much wind (yet)

Very few birds, no Song, around hotel.

Going to walk in garden of hotel. Slightly reminiscent of Mt Bower.

6:50 a.m. See Ind. perched on wire. In more or less hunched diagonal posture. Utters many single "Kuwaah" notes. Hoarse, slightly nasal, moderately loud. Also many rattles slow but extreme downward TF's Tail brought down to vertical. Notes and TF's are not coordinated. All sorts of "combinations" apparently at random.

Then I see another Ind on wire 50 m. away. Sitting in similar posture. But quite silent And doing many fewer and slighter TF's.

Then preceding bird shuts up At same time its TF's also become fewer and slighter. I.E. the extreme TF's are ritualized signals, not just balancing movements

Second bird flies away. First remains behind for some minutes. Then flies away in same direction as second 7:01 a.m.

Wind is coming up.

NOTE: Ind. looks like C. maevius rather than like abyssinicus

7:05. Some other bird, a Shama-like type, is Singing on wire down the path. So perhaps some species are coming into breeding condition

7:12. See single Whitethroat in garden. Perched aft up dead tree. Silent and alone Then the bird sees me Looks alert. Does several single Headbobs (HB). All HB's are V-D. Then flies off. HB's obviously locomotory wit. moves. Presumably this bird is (was) the same ind. seen yesterday It seems to have a large Territory

7:19. Single Hoopoe lands on wire, 2-2.5 m. from pair Psittacula parakeets. Does extreme CR with much bowing (balancing) at first. Then sits quietly in unvitualized pasture.

All birds fly off when hawk flies close overhead. Hoopoe goes into adjacent Casuarina.

Walk back along path from which I came. See White-throat on fence post. Silent and alone. Also Ind. on wire, just about same spot where first seen. Also silent and alone. White-throat flies off. White-throats seem to be shy-er than rollers. Not surprising, considering size relationship.

Ind. ignores Bee-fly buzzing by. Then takes off when I come close. Silent.

Walk over to grove of palms (are these "Palmyra Palms"?) by pond. Apparently no hornbills. In fact, nothing at all visible in the palms for the moment. Why is this palm used by birds so little? Perhaps because old fronds are cut off???

7:46. Come across group babblers in Casuarina grove. Alone except for small squirrel. NOTE: the local babblers are rather distinctive in appearance. Crown and cheeks are almost white, distinctly marked off from gray-brown of rest of plumage. Bare patch of skin behind eye is whitish or very pale yellow. Throat is unstreaked, medium dark. Dental 2/3 tail quite dark.

7:51. Pair of Psittacula fly neat round hole 15 ft up in dead palm (crown broken off). Obviously thinking of nesting, or actually doing so (or have young or eggs in nest???)

Holes probably too small for hornbills.

See another pair Psittaculas investigating large, irregular, perhaps natural hole halfway up in live palm.

Come across small group of Wood-swallows hawking for insects from wires. There must be competitors of bee-eaters.

8:30 Single White-throat flies over pond, into or through Casuarinas
Silent and alone as usual. A little further on, see another single White-throat
fly by high overhead.

Then see single Green Bee-eater making low sallying flights from bushes
into just below group 3 Woodswallows perched quietly on telephone wire. No
visible interaction between the 2 species.

NOTE: the local Green Bee-eaters (presumably orientalis) are "low" in
their habits. Was this also true of the Senegalese representatives of the species?

Walking back toward hotel. Local Ind(s) seem(s) to have gone to
does local White-throat

Stopping observations 9:00 a.m.

NOTE: the local Psittacula probably is krameri

Start out again 4:25 p.m. Sunny and windy.

Single Ind. on wire near where first ind. seen this morning. Silent
and alone. NOTE: (I shall call this bird - or birds - "A"). Ignores
nearby drongo and crows. (The drongo, on the other hand, attacks and
chases a crow!)

There is also a single Green Bee-eater making low sallying flights
from low perches.

Go on down to rice fields. Lots of Egrets and other birds. But no visi
ble Coraciiformes, except for a few Green Bee-eaters at edges.

Then see single White-throat perched on crown of palm (usual speci
es) in midst of rice fields near pond.

5:05 p.m. Further along in rice fields. Single White-throat flies
out of crown of palm in rice fields. Utters many Alarm Notes in flight.
Loud, harsh. Essentially single. Several times accelerated into doubl
ets and triplets. "chak chak chak-chak chak chak-chak-chak

Chak Chak Chak....."

Farther on, see another White-throat flying lazily alone. Silent. The species certainly is dominant here!

5:22 p.m. See flock 10-12 bee-eaters flying overhead. Apparently going to roost.

See large golden-backed woodpecker in palms where first Psittacula seen this morning. Perhaps it is this species that is making the holes.

One ind. flies into crown palm. Displaces pigeon. Silent. Then a second Ind flies into crown palm 15 ft away. Also silent. Ignores Drongo 4 ft away. But does several extreme silent D-V TF's (presumably provoked by, or directed toward, first Ind). Then Hoopoe flies into crown of adjacent palm. Flies over to second Ind. Tries to land on same perch (or attack???) This provokes outburst of Bluebelly-like Chatter!!! Presumably (but not definitely) by Ind. Hoopoe returns to original perch. Lands with ER. Relaxes. Both Inds and Hoopoe sit quietly.

Then first Ind flies off. Disappears from view. Then a 3rd Ind flies in. Lands in tree not far from second. Sits. Then a 4th Ind flies in. Lands in another palm, not far from the others.

Then 2 of the Inds fly over and land close together in still another palm. Both sit quietly, performing many extreme V-D TF's. Then one flies off to palm 50 ft away. Lands with definite Chatter. Again Bluebelly-like. Can't tell if there is another bird in the tree at time of landing or not.

While I am writing these notes, all the Inds disappear from view. Presumably all roosting in crowns of palms. Perhaps separately. Perhaps together (?)

5:50. Hear Ind. Chatter behind me. Look up to see Ind perched on top of broken palm. Mynah perched half way up. Mynah whistles, flies off. Ind sits quietly. Looks down into hollow top from time to time. Can't tell if this is ritualized or not.

See another Ind in distant tree palm.

This may be something of a congregation!

Ind ignores tree pie moving in adjacent trees. Then eventually flies off 6:02 p.m.

Getting quite dark now.

December 20, 1978
Mahabalipuram

Going to start earlier this morning 5:50 a.m. Calm and clear still quite dark. A certain (small) amount of non-Coracii form song.

Arrive roller-palm area 6:00 a.m. Very quiet. Still semi-dark.

2 small owls in crown of palm

6:10 a.m. First Ind flies into palm crown. Alone. Silent. Lands on stalk of one of the (lower) cut off fronds. Sits semi-hunched. Does several stereo TF's immediately after landing. Then sits immobile.

Ignores loud dispute among mynahs

6:16 Single White-throat flies in. Silent. Lands in small bush edge rice field.

Then see 1 or 2 more Inds in distant palms. Apparently silent. First Ind flies off in their direction. When I walk on, I find 2 Inds sitting 2 ft apart in crown of same palm. Quite silent. Not even any TF's. Then one flies off silently

6:22 Hear one burst of roller chatter not far away.
See one Ind preening quietly in palm crown. Then flies away.
All Inds apparently gone by 6:28 a.m. (Note: I think that the Inds roosted in palms across road. Could their movements here be considered a "morning assembly"???)

Single White-throat is still perched in same bush 6:35. Just looking from side to side. Makes one unsuccessful, presumably aborted, pounce down to stone by pond. Then flies off.

6:55. Single Ind flies into crown palm. Silent. Sits. Flies away. Perhaps disturbed by Psittacula. (These parrots are being active and noisy now — actually entering holes.)

NOTE: Headquarters here probably is Dicrocirus hemphreyense (name according to Salim Ali).

I go for long walk in rice fields. 7:23 Single White-throat in isolated tree flies away with many "chuk" notes. These notes are often grouped into doublets.

Walking back to hotel 7:50. See A Ind. at usual site, on wires. Flies off with single loud "Kreeeeaaar" note as I approach.

Out to temples in town this afternoon

4:15 p.m. Single Pied Kingfisher flies by pond edge of town. Silent and alone.

NOTE: D thinks that she heard a Hoopoe begin to sing (to utter "Hoops") in the garden this morning.

NOTE: The palm here definitely is the Palmyra (presumably the same species as in the Lesser Sundas? — see Fox.

December 21, 1978
Mahabalipuram

Going inland and south from Mahabalipuram. To Chingle pot. Stop 5:30 a.m. Area of mixed vegetation. Rice fields one side of road, trees on the other. Quite a lot of miscellaneous bird sounds. Nothing very Coraciform-like.

6:20 Single White-throat flies out of Coco grove near village uttering many loud "Chak" notes. Lands mid of well. Sits silently. Flies off again with more "Chak"s. Lands in crown palm. Sits. Then utters several series of single "Chak"s while perched. Single notes, 4-8 series. In rather fluffed unritualized posture, head and bill horizontal. Slight tail bob each note. These series are answered by similar series by another bird at least several hundred m. away. (out of sight). Then both birds fall silent. First bird continues to sit quietly in palm. Looks down toward ground from time to time.

Was this communication between mates or between rivals?

Walk down side path. See single Ind. on distant wire. Also another White-throat perched 15-20 ft up in small broad-leaf tree in rice fields. Silent and alone. Flies off. Lands on wire 100 m. away. Sits.

Will! Will! Will! Look around to see that there are 4-5 other White throats in general area. On wires and in crowns palms. All quite scattered, hundreds of ft. (or m.) apart. Except for 3 inds. 2 form a pair. One (♀?) seems to be slightly smaller than the other (♂?). The members of the pair are sitting only a few inches apart from one another. The third bird is perhaps 10 ft away. All 3 inds. on wire.

All 3 ignore nearby drongos and 1 Green Bee-eater also on wires.

All 3 look quite relaxed and unritualized at first. Then I realize that something may be going on. One of both members of pair does some rather jerky preening. Always side of breast and/or under wing. Also rather extreme and obviously ritualized "Looking." Almost like PRG in aw!

Then the 3rd, single ind., flies off. Disappears from my view, but it probably stays around quite close in the neighborhood (see below). At approximately this point the members of the pair start to display. Hop around on wires, always staying within a few inches of one another. Sometimes adopt "Oblique" posture on landing after hop. Usually, but not always, facing partner.

Then the 2 members of the pair fly over to cross-tie post (supporting wires). Continue display. Rather more spectacular than before. Much hopping about. Also short flights from perch to perch. Many displays, usually but not always when landing right beside partner. Many Wingspreads. Sometimes with unritualized postures, sometimes with Oblique and/or Looking (perhaps really HD). If both O and HD are performed, then the former is likely to precede the latter. Occasionally O and/or HD is performed without Wingspread on landing. Orientation of Wingspreads is definitely varied. Most frequently facing partner (this emphasizes white stripe on wing — very conspicuous). But Wingspreads facing away from partner certainly are not rare.

Then the 2 members of pair fly down to flat roof of small brick hut (perhaps 8 ft high). At same time, I see that third is 3rd ind. perched (again?) on wires about 10 ft away. This 3rd ind. just sits, for the time being, but the members of the pair continue and elaborate their displays. Much parading, in "Agg V" type postures and a little hopping. Some O and quite a lot of HD. Then the birds begin to fly down to side walls of hut & does it first. Begins to investigate niches in wall. Then small holes in wall. Then ♂ begins to do something. Apparently "inspecting" potential nest sites. Sometimes birds "inspect" more or

less alternately. Sometimes simultaneously. But never both same hole at same time. And neither ever actually enters a hole. Clings to walls. (This emphasizes blue and black of wings) After each flight returns to roof. Lots of display. Again mixtures of Wingspread and/or O and/or HD. Also some lateral Headshakes, without other ritualized components (at least no other visible components) while parading. Once Headshake develops into General Shake. Once ♀ does rather extreme V-D TF, tail raised between wings. Looks almost like soliciting. But it does not lead to anything more obviously or unmistakably sexual.

Finally, ca 6:30 am, the birds begin to relax, display less frequently and less energetically. Then they fly up to wire, separate, perch on wires 50-100 ft apart. At same time, and presumably not coincidentally, I see that the 3rd ind. seems to have disappeared. The 2 members of the pair continue sitting quietly, still far apart, for approximately 10 mins. Looking down at ♀ for fully most of time. Apparently looking for prey.

Then 3rd ind. (re) appears. And displays between the 2 members of the pair begins again. Much as before. Parading on hut top. Inspecting nicks and holes in hut walls. Lots of Wingspreads and/or O's and/or HD's. Some lateral Headshakes. Also some "nervous" preening of breast and/or under wings. No raising of tail this time. While the mates are displaying, the 3rd ind. sits and occasionally hops along wires 10-20 ft away. Apparently not displaying itself. But twice the 3rd ind. swoops at pair. Obviously hostile but no actual physical contact. I did not catch reaction of pair. Perhaps only a flinch or turning to face opponent. Perhaps (?) Wingspread.

During all these interactions, I was rather far away from the birds. I did not hear any sounds. Certainly the birds did not utter any loud "clear" notes. But they could, and probably did, utter softer sounds.

After some time, I tried to get closer to the birds. And I did, in three

circumstances, hear a soft Rattle when one of the birds did Wingspread

All 3 birds fly away 7:10 a.m.

SEE COMMENTS BELOW.

When I get back to highway, I find that Olga has been watching other White-throats. 2 pairs. Some flying about with "Chirk" Notes.

It seems likely that the White-throats here are coming into breeding condition. And/or that they are unusually crowded.

The name of this little town is KUZHIPANTHANDALAM

going on 8:15 a.m.

A little further on, 8:21, see 2 White-throats 1 ft apart on wire by flooded field. Also displaying. Lots of looking from side to side, facing towards and away from one another. Irregular but quite exaggerated. Occasional true Wingspreading by one bird. Then one flies to adjacent wire. The other follows. Both birds do intrinsic Wingspread after second bouts. Again I am too far away to hear soft sounds. Then one bird flies away. Second relaxes, starts looking for prey.

This would appear to have been a purely hostile encounter.

Now I see that there is a single Bird on same wire as White-throat, but at least 1000 m. away. Sits quietly. Flies away. White-throat pays no attention. (It is my impression that these 2 pairs are irrelevant to one another.

8:46. Now I see that there are 2 White-throats on wire (again). But at least 800 ft apart. Ignoring one another. And a single Pied 30 ft further on. Pied flies off. Then 2 Pieds (or) appear. Sound between the 2 White-throats. One flies off. One of the White-throats utters "Chirk" Notes as Pied flies by.

10:05 Stop in area of relatively high (w-heat) land. Rollers on wires. But apparently no Kingfishers.

10:25. Still going back. See violent dispute among 3 birds. Presumably

pair and intruder. In stand of 2 or 3 medium sized trees (Legumes?) edge rice field, between Kuzhipanthadalam and Mahabalipuram. Despite already is in full swing when we arrive.

Lots of chasing back and forth in air. With many loud harsh "Kreeaaar" Notes. Also a few bursts of accelerated abbreviated notes "Kar kar kar kar" etc. Obviously closely related to ordinary "Kreeaaar"s, but higher intensity (or something). I shall call this pattern "Chatter."

When the 3 birds land in tree ca"-2' ft apart from from another. Much excited movement, hopping from branch to branch, and very high intensity hostile display. Bowing and Growling.

Bowing is a very rapid down-up-down-up-down-up..... movement of the whole body. Usually begins with a real St., head and bill pointed almost vertically upward ↑ Going down to something like ⟶ or ⟶ Neck moderately extended in both positions. This is often, in extreme forms, accompanied by what could be called "Wing holding". Carpal joints held way out, but primaries only partly spread, or not at all. The effect is rather different from the Wing-spreading of Kingfishers. Whenever there is room, the performance also is accompanied by repeated, if rather irregular, "Tailwagging" Strictly vertical, D-V. One bird (the ♂ of the pair?) usually spread the tail feathers (either completely, or on one side only) while Tailwagging. The other bird did not usually spread the tail feathers

The Bowing is accompanied by characteristic sounds. Sort of a muffled accelerated Chatter. Pumping. guttural "Growling" is the best term I can think of for the sound (although it does not really suggest the very rapid rhythm).

The whole performance is very reminiscent of the Choking complex of some birds! And probably also the Bowing and Rattling of Senegal Woodhoopoes!

In some cases, the low point of Bowing seemed to be mid HD. Perhaps even PAG. Once the apparent PAG led to BW.

As would be expected, there also were lots of incomplete performance. Perhaps some Bowing was silent. Certainly the birds sometimes stood in it with out uttering any sound audible to me (this might be merely an "intention movement" of Bowing - Growling). There may also have been some silent HD. As far as I could tell, there was no displacement preening.

Some of the Growling seemed to intergrade with Chattering. But there were no typical, long, "Kuccaar" Notes while the birds remained perched.

Suddenly the birds all fly off. Now they do utter "Kuccaar" Notes in flight. Fly to Casuarina grove 30 ft away. Land. One ind. attempts to land on top of another. Probably mistake or attack rather than copulation attempt. This ind. eventually settles on perch 1 ft away from the others. More rapid Bowing, Growls etc. Then 1 ind. launches attack upon another. Real furious battle. Both tumble down to ground. Flap and roll on ground. Firmly gripping one another by bills. Eventually, roll down to rice paddy, still flapping, biting, and pulling as they go. Disappear from view (obscured by vegetation). Stay on ground, out of my sight, for at least 5 mins. Presumably, still struggling.

Then I go forward to investigate. The 3rd bird not involved in the fight, presumably the ♀ of the pair (?), utters short single "Kur" Notes as I get close. All CN's ?. Finally the 2 combatants separate, fly up. All 3 birds fly away. Again with the long "Kuccaar" Notes in flight. One ind. also does Sour (perhaps 5 or 6 ft). Probably still "Kuccaar"ing as it does so.

Then all 3 birds fly far away.

This was about as violent a fight as I have ever seen

COMMENT: The behaviors of the White throats at Kuzhipanthala Lane this morning was highly suggestive. In some ways reminiscent of the Blue-bellied Roller. Mates (?) rushing together to display to one another, in order to repell an "intruder" (?). Possibly "pseudosexual" components in the display? And also

rushing to potential nest sites, either to protect them and/or to advertise them.
Is behavior of this type correlated with high density of populations?

December 22, 1978

We went to and from Madras today. We saw lots of Buds and White throats on the way. The 2 species certainly overlaps very broadly indeed. But it does seem to be true that the Ringfisher is comparatively seldom found very far from water (even though or when it feeds from dry ground), and that the roller can occur in dry areas far from water.

December 23, 1978
Mahabalipuram

Going back to village of Krishnapattinam this morning.
Arrive 6:09 a.m. Just getting light. Quite a lot of bird song including many Loud Rattles by something
Single White throat already on wires by hut 6:10 a.m. Apparently just sitting quietly, looking around. Prickles occasionally. Also occasional OCB, but I can't hear any sound. Most of the time when sitting has "semi-CR". Flies off 6:31. Frightened by children?
COMMENT: Obviously this bird is not in full breeding condition yet. Further indication that encounter day before yesterday was hostile
The day is turning out to be rather cloudy
I go for walk around village. Buds very quiet now.
Usual bird ("X") back on wire 6:46. Alone. Apparently quiet
Does occasional D-V TE's.

There is another "single" White throat" on wire several thousand ft away
I walk on. See more White-throats flying around
Also hear more Rattles, but still can't identify performers. Then I hear
many Rattles from palm, and see White-throat fly out. It flies high and starts
to make wide irregular circles. Obviously flight display!!! Utters constant
Triplets. "Tit-tit-tit" These sound like abbreviated Rattles. Sometimes abbrevi
ated to doublets. Sometimes (?) lengthened to quadruplets. Flying movements
themselves apparently unattended.

Then we hear more Triplets coming from distant palm. And then second
White throat starts flight display! Also circles uttering Triplets. Doesn't
go as high as first bird. First bird flies over to vicinity second. Both continue
Flight Display. But not actually "together". No real "chase". One bird is
not actually following the other. Then second bird lands on wire. Does extreme
Stand Wings spread on landing. This may have been silent, i.e. between calls
Then begins ideal prolonged Rattles. First bird lands in palm & flies away. I
don't see actual landing. But this bird also begins long Rattles. Both
birds Rattle for several minutes. In sitting postures. Neck stretched forward
and slightly upward during utterances. Bill slightly open, vibrating in rhythm
with the sound. First bird also does at least one extreme D-UTF.

Then second bird flies away. Frightened by passer-by. First bird
continues Rattles for minutes on end. Gradually but irregularly decreasing in
frequency. Some phrases also shortened

First bird finally flies away too. Ca. 7:17 a.m.

COMMENTS: These Rattles are very loud. Rather high and metallic
Fairly clear. Certainly not as harsh or rasping as "Chuk" Rattles.

These are the Rattles that I heard so frequently early this morning just
as it was becoming light. Obviously the song of the species. Hostile territorial Song

Triplets are obvious, abbreviated or interrupted Rattles. Perhaps long series are impossible to make continuously while flying.

Leave village, proceed along road to Tirunkalikkunnam. Almost immediately see small bunglow perched on edge road by small pond Acedo atthis ("Atthis"). Lots. Does many U-D Headbobs. Also occasional WF's. Not coordinated. Then goes fishing, flying from low perch to low perch (once landing on ground) fishing accompanied by spectacular hovering. Absolutely hummingbird-like!!! Also utters single high thin "Insect" Notes in flight and while hovering. Hovering followed by bullet-like plunges. Once successful (triumph). At least once unsuccessful. More Headbobs and WF's while perched. Apparently always silent while perched.

While this is going on, we see 3 White-throats flying around in distance on other side of road. Surprisingly enough, very little display. But one will certainly does Wing-spread after landing in palm near another.

Further on, past town, see single Atthis perched on low wire by road. Flies off. Then hear more White-throat Rattles in distance. 8:48 a.m.

Going further down road, see several apparent pairs of White-throats. Part sers sitting a few ft or m. apart from one another on wires But also (still) a lot of apparently single birds.

Inds always appear to be single.

Further on, see White-throat trying to eat moderately large moth. Having great difficulty. Trying to beat insect against wire on which it is perched. This seems to provoke some Rattles and flying about by other White-throats some distance away. But no attempts to approach or rob.

Stop at Kuzhipuramthattiala on way back 10:35. Town very quiet 10:51. See single Atthis perched on high wire above flooded field. Silent and alone (presumably as usual)

Back to hotel ca. 11:20 a.m.

Going out for walk in afternoon 4:00 p.m. Cloudy and very windy. See Hoopoe on roof. Single White-throat 100 m. away on wall. Quiet. Does some Head-bobbing.

4:05. By road. Hear White-throat Rattles in distance.

Lots of Green Bee-eaters around as usual. Some high pitched "Klunk" ing notes when 2 birds come close together in flight. Also series of "Chuk"s. Rattle-like in effect. More Rattles of "Chuck" notes when one bird flies away from me. Doubtless the bee-eater repertories could be easily homologized with those of other Coraciiformes!

See single bird perched high in palm in broad expanse of rice fields.

Watch single White-throat perched aloft up on dead Pandanus trunk by flooded pond. Silent and apparently alone. Flies down to water, apparently not breaking surface, then back to perch. Obviously without prey.

Then I see that there is another White-throat, presumably mate, perched on another Pandanus trunk 10-12 ft away. Both silent and immobile. Just sitting hunched and stuffed against wind (see drawing in pad).

One flies off and disappears 5:01 p.m. Then I see that it is perched on leaf of live pandanus a few yds away. One bird flies down to ground (out of sight) Then flies over to live pandanus. Starts to land a few ft from its mate. The latter just looks toward the landing bird. And the landing bird changes its mind. Flies away with "Chak" Notes.

These birds certainly are not demonstrative!

Finally the remaining bird flies off in same direction as its partner

5:20 p.m. Single Ind. flies into crown of palm. A few seconds later, a second Ind (mate?) flies in and lands in another palm 100 m. away.

One Ind flies down to ground. Bare sand. Apparently doesn't catch anything.

Both Inds apparently gone now 5:30. Presumably to roost. No! One bird flies down to ground. Another flies down and supplants. Both birds flap up semi-chase. Then both land opposite sides palm crown. Both silent. Both do many D-V TF's at first. Then sit. Then one utters long series of long "Kreeeaaar" notes. In unritualized posture but with occasional irregular D-V TF's (difficult to distinguish from balancing). Then the calling bird shuts up, flies directly toward the other. Obvious supplanting attack. The attacked bird flies off with one unusually high, thin, frightened-sounding "Kreeeaar" Attacker follows. Inviting chase. No swoops or soars. No more calls. Perhaps a 3rd Ind also gets involved in chase briefly. Then 2 birds land on opposite sides of palm ground. Silent. Apparently relaxed now. One eventually flies away.

"Kreeeaar"s must be hostile but lower intensity than Growling.

NOTE: At some point in this performance, the 2 perched Inds were approached by a tree pig. No apparent response

5:43 See 2 Hoopoes supplanting one another in distance. Lots of CR. But no sounds audible at this distance.

5:48 Now (again?) there are 2 Inds perched in adjacent palms. All very calm and relaxed.

Getting dark-ish. I will start back to hotel.

5:58. Something flies over head, very fast erratic zig-zag flight. Utters loud, nutter High pitched, "Zeee zeee" doublets. Looks like a King fisher, but I can't be sure of identification. Bird eventually comes down, flies low over bare field. It is immediately swooped at and chased by a White throat (definite) Attacker utters rapid series of "Chak" notes during chase. More or less Chatter-like. Then breaks off. Lands on wire. Sits silently. Flies away.

December 24, 1978
Mahabalipuram

Very gray day. Occasional rain. Going out in afternoon 3:55 p.m.
Lots of "Chak" Notes in area. Obvious & Mute. throat
Flush a couple of Green Bee-eaters. Fly off with rapid series abbreviated "Chuck" Notes. Actually a red Rattle

Out in rice fields. Single White-throat flies overhead. Silent. Another White-throat flies out in pursuit. Utters Rattles (quite long) in flight. Then peels off. Approaches, utters chatter series of "Chak" Notes. Lands silently in tree.

Hoopoe lands in tree a few seconds later. There may be a dispute between the hoopoe and the Ringfinch. In any case, the hoopoe flies away again. 4:10

One Ind. flies out of palm over to crown of another palm, 300 ft. away, on which a second Ind is perched. Newcomer lands silently. No display by either bird. I.E. They are obviously mated, even though they are not usually close together. Then the newcomer flies back to its original palm.

Ind (again) ignores Drongo landing only a few inches away.

There is at least one White-throat in Pandanus where I watched the birds yesterday. Flies off silently when we approach.

Then a gentle rain starts again. Birds become even less active than before.

5:20 p.m. Rain almost stopped. Watching the hotel White-throat. Perched on high wire. Suddenly takes off, silently. Makes wide circular flight over adjacent Coco-plantation. Utters one burst of "Chak" Notes in mid-flight. I cannot see any other individual nearby. Then the bird returns to its original perch. Is this sort of behavior "patrolling" territory.

I go on to another open field. There is one White-throat perched on high

wife, and a single Ind perched on stone fence post about 500 ft away. Ap parently ignoring one another. Both just sit. Each makes 2 or 3 flights down to ground (never simultaneously), apparently without getting any prey. All pounces are silent.

NOTE: Both these species are particularly "inept" Rather like the Hoary ou in Liberia. They pounce only very rarely. And usually, in my experience, un successfully. Be that as it may, they certainly try to conserve energy — except during disputes (and presumably some other social interactions)

I noticed that the Ind usually performed several D-U TF's immedi ately after landing on its perch after a pounce, even though it was effectively alon e. This pattern would seem to be comparable to the puzzling tail-bobbing of Turdus spp.

Both birds remained at their perch until very late. Presumably predat ors of this type have to spend as much time "hunting" as possible. The Ind finally flew away silently at 5:48 pm. Went over to palm grove by pond. The White-throat left at 5:52 pm. Uttered long but slow Rattle (or interm ediate between "Chak" & "Chatter" and typical accelerated Rattles) as it went. Flew to adjacent Casuarina grove.

NOTE: Sunset today was at 5:49 pm. But it became dark relatively early because of the cloud cover.

NOTE: Interspecific reactions must be at least rare among the local Coraciiformes

December 25, 1978
Mahabalipuram

Going to Kuzhipandal this area again this morning. Arrive early 6:02

a.m. Still quite early. But presumed White-throat Rattles are already in progress.

Rattles coming from high in trees or high wires.

Also hear rather long but irregular series of "Chalk" Notes. Apparently uttered by birds in flight.

Watch single ind. perched on wire over rice field. Probably one of the inds. involved in flight display a few days ago. Fluttering Rattle after Rattle. Form alert, rather elongated posture. Head more or less horizontal. See sketch in pad. Then another ind. flies in, uttering many "Chalk" Notes. Lands on wire 45 ft from first. Continues many "Chalk" Notes for some seconds after landing. (Note: Most of these "Chalk" are fast, but the general effect is not Chattering.) Then the second ind. switches to Rattles. Utters many Rattles in rather rapid succession. First ind. stops Rattles momentarily when second ind. lands. Then resumes them. But less frequently, at more irregular intervals than before (Less frequently, at the moment, than the second ind.)

Then the second ind. flies to perch nearer first. First then flies to join second. Lands only inches away. Not much in the way of "Greeting". Both inds. show wide St. Tuttle or no Thuggeread. Continue no loud sounds. Some Head bobs. (Possibly also TT's.) Then they both sit more or less peacefully. Obvious mates. One is much more bunched-fluffed than the other. (This may be the larger of the 2 inds.) Then the less fluffed ind. begins to preen, apparently rather nervously. Joint under wing, along sides breast. Then over wing. Then the other ind. also begins to preen under wing. Then both seem to relax.

Then they are disturbed by old man walking along path. One ind flies out of sight. The other just moves further down wire.

COMMENT: This incident suggests that Rattling is mutual. Done by both ♂ and ♀. "Joint territorial defense."

Rattling has stopped in whole area by 6:15 a.m. Presumably all the Bushfishers have gone to hunt.

More Rattles by another bird in distance 6:40. It is perched high in palm apparently alone. Still other nds. still Rattling further down patt.

6:48. There are 2 nds on top little brush hut. Not close together. Apparently relaxed. One flies up to adjacent wire. Both sit. One makes abortive pounce. Back to perch. Both sit.

Many other White-throats on other wires. Definite signs of pairs (in nds. only a few yds. from one another)

None of the birds is making any pounces at the moment.

7:00 a.m. No trace of flight display (yet). It must be a very high intensity performance.

More Rattles in distance 7:10 a.m.

NOTE: Weather is cloudy, but perhaps improving

2 White-throats (and similtaneously on wire 10 ft apart. One does rather extensive flt on landing

entry (tail Wingspread

7:12. 2 other ♂♂ White-throats. Bush chorus in air (not very high). Persistent utters one series of "Chalk" Notes. Then the 2 birds separate

7:20. Go on a few-hundred m. past village. See other pair perched on high wire over pond-flooded field. Stop to look. Then see 2 White-throats, 1 ft apart, on ground just in front earth bank. Silent. Apparently relaxed. But the bank has nice round hole in it. Arouses nesting hole. Twice one of the White-throats walks sleight to visit hole. Once actually puts head into it. Then back to rejoin mate. (Note: this is the smaller of the 2 birds ♀?) Then "♀" flies into adjacent bush. "♂" flies into distant palm. "♀" comes back to sit on ground (calls) Both birds silent throughout

No Wingspread. 2 ft. probably a lower cut (or tail ft plus Wingspread)

There birds would seem to be coming into breeding condition!

Then both do begin to utter Rattles. To one another? Or is there a 3rd bird around? "♀"'s Rattles tend to be rather softer than the "♂"'s.

"♀" still on ground. But now I see 2 White-throats in dead palm 100 m away. "♀" still Rattling. But the 2 mds. in palm are silent. Standing in alert postures. Then both fly off. "♀" shuts up. Flies to adjacent pile of bricks. Sits.

Then one bird ("♂" from palm) launches brief Flight Display. One circle, not very high. With Quadruplets. SEE BELOW. At same time, "♀" seems to disappear. Can't find her. Then the flying bird lands on wire near nest bank. Utters several long Rattles after landing. Shuts up.

There have been absolutely no reactions between the White-throats and the others.

Sprinkle of light rain 7:45. We are going on.

7:55. See pair of Red Kingfishers on wire above very large pond. 1 ft apart. Sitting quietly in pouring rain. 1♂ and 1♀ (Difficult).

Go on to Tirrukkalukundrum. Then start back again.

8:50. See 3 Red Kingfishers on high wire over small pond. 2♂'s and 1♀. 1♂ and 1♀ fly off silently. The other ♀ remains behind. A single White-throat 40 ft away doesn't seem to pay any attention.

Further on, see single Utters perched on high wire edge large pond.

Driving along, see 2 White-throats land simultaneously 2-3 ft apart on wires. One does Sk + Wing-spread. Can't tell if there is any accompanying sound or not. Then one flies down to bank by ditch. Then both fly out of sight to far side of bank. I go around. Flush one. Goes to wire. Utters many Rattles, interspersed with Triplets. ? E. Triplets probably are something more (or else) than simply abbreviated Rattles. Then bird flies off silently 9:14 a.m.

Rain has stopped now.

Then 2 Red flycly Long zig-zag "chase". Accompanied by loud hard "Tin-i-dit" type notes. Flight display?

While I am watching these birds, Olga sees White-throat eating crab. Go on to pond where White-throat visited hole earlier this morning. Find both White throats perched on ground in front of bank. Also 4 Attis perched on boulder 4 ft away. And a second 4 Attis on high wire 10-15 ft away. One White throat flies out of sight around bank

Back to Kuzhipanthandalam 9:45. Members of White-throat pair ("Z") perched quietly close together on wire. Rattles by other White-throats on other side of road.

2 Attis close together on high wire 300 ft from White-throats.

Do Attis and White-throats tend to aggregate with one another during breeding season because they have to use same banks for nesting???

Then rain starts to pour.

COMMENT: We are told, by the local people, that it has been unusually rainy here, for the last couple of weeks, for this season. The newspaper says that we are getting a bit of the northeast monsoon. A tourist booklet says that Madras gets 127 cm. of rainfall (presumably this is an average?)

NOTE: Salim Ali says that White-throats nest in typical holes in banks. But one of the villagers says that they nest in holes in trees. Perhaps they do both.

COMMENT: Perhaps one of the reasons that kingfishers (and bee-eaters) are more successful than rollers is that they do more of their own excavating for nest holes? If so, why don't rollers do the same thing? Because they are too large (bulky)?

COMMENT: It is quite possible, even probable, that the Rattles of the White-throat are not entirely simple ~~~~~ I think that they may tend to start high and get progressively lower. Perhaps the first note also is slightly

differentiated (as a sort of "Intro", as in senegalensis and malimbicus)
steady rain (monsoon) all afternoon.
I notice that the local brotil White-throat is still active during the rain. Presumably it cannot afford to stop looking for prey

December 26, 1978
Mahabalipuram

Still pouring rain early in morning. We start out late, ca 6:15 am, when rain seems to be stopping. But then it immediately starts to pour!

We go to pond (with bank) just beyond Krishnapuram Welcome. See lots of White-throats on wires by the road. Also a Pied on bridge. Apparently both species are trying to hunt under these appalling conditions

Reach pond 6:45 am. There is a single White-throat perched on wire. Just looking from side to side. (Note: pond level has risen at least 1 ft, perhaps more, but hole in bank is still safe.)

The Attins are invisible.

White-throat on wire is doing a lot of preening (naturally enough). Also occasional Headbobs. Definitely looking for prey.

Starting Brick 7:00 am

7:22 Near Mahabalipuram stuff. See 3 Pied Kingfishers on wires over flooded field. 2 ♂'s and 1 ♀? Definitely fishing. Hovering and plunging. Can't tell if they are successful or not.

NOTE: We did not see any rollers on wires or posts this morning. Of course, we may have overlooked them. But they may also be less active in the rain than are the Kingfishers.

NOTE: Why are there no Dollarbirds (Eurystomus) here?

. Rain stops around 2:00 pm. Still cloudy. Going to go for walk in direction of town (Mahabalipuram itself).

Start out 4:05 in a renewed light sprinkle

Ind lands low in Casuarina. Silent. Apparently alone. But still does fail-wags after landing. See another Ind on wire 500 m. further on

Another Ind still further on. Flies down to sand. Doesn't get anything. Then flies to edge paddy field. Flies up with small (6-7") thin snake in bill. Lands on stone face post. Beats snake repeatedly. Then swallows it head first. Flies off to distant tree. Silent throughout.

4:55. See single White-throat perched on high wire. Utters Rattle after Rattle all very Song-like. Posture unritualized. All Rattles begin high (no Intro), and then progress evenly lower. Last 1 or 2 syllables semi-detached

~~~~~^^ ← Very diagrammatic!

December 28, 1978
Mahabalipuram

It poured rain all day yesterday (rains have been record for this month). Also last night. But they stop this morning ca. 5:15 a.m. Going to try to walk around bold area and road.

Still a lot of cloud. Not much Song. Hear faint White-throat Rattles in dist and ca 6:14 a.m.

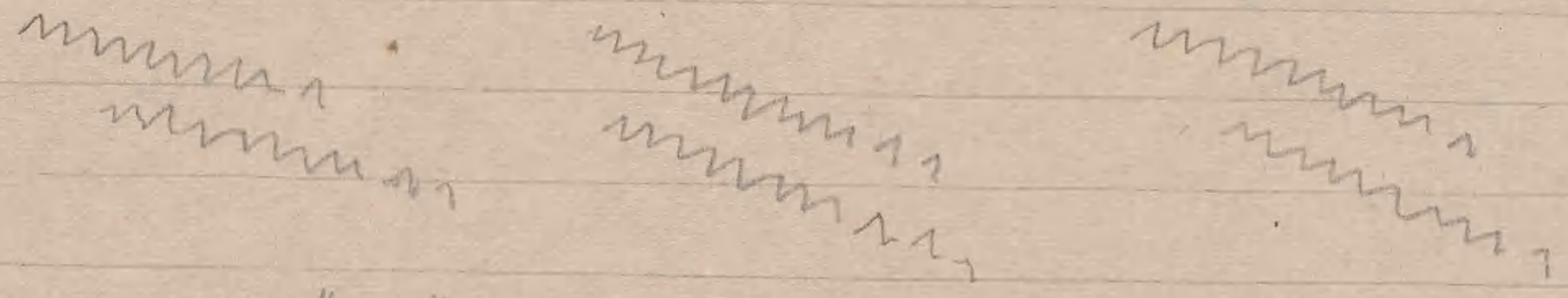
6:33 See White-throat 9 ft up top small Casuarina in "garden". Another 100-150 ft away on high wire. Both silent. Just sitting. Garden bird flies off.

Then is another White-throat hunting way down road.

Near bird on wire begins to utter Rattles. Because it is now separated from mate??? Eventually, it is "answered." Rattles in distance. Then a
~~~~~

bird flies in. Presumable mate. Lands just beside Rattling bird on wire. The latter immediately flies up. Begins Flight Display. One wide circle, only moderately high. Beginning Doublets, switching to Triplets (displ ite). Second bird sits behind on wire. Then flying bird lands on wire far down road. Presumed mate flies over, lands 50 ft away. Both sit quietly.

Then presumed mate (♀) flies away toward rice field. Remain ing bird immediately starts more Rattles. It is answered by more Rattles from direction rice field. Wide overlapping of phrases. Bird on wire ("♂") begins, "♀" starts a second or so later.



Then "♂" suddenly starts to utter Triplets and Quadruplets while still perched. "♀" flies in, lands 1-2 ft away. "♀" does extreme ft on landing. "♂" does ft with TV. Both silent.

Then both just sit. Quite silent now. Both fly off
6:58 a m

Obviously mates use Rattles to keep in touch with one another.
6:59. Single White-throat flies overhead. In straight line. But still utters several Doublets
Light rain starts 7:00 a m
Now I hear lots of White-throat Rattles in distance.
Single White-throat, presumably member of pair comes back. Lands on

bright were lots silent. I see that there is a single Ind on adjacent wire only 10 ft away. Also silent. No reaction between the 2 species.

NOTE: While the White-throats were being active earlier, I heard burst of loud Ind "chatter" (rapid series of descending "Kerecar" "Sotes ———) in neighborhood.

The Ind flew across road, down to open wire post. Flew up to wire post. Faced 1-2 ft away from another ind. Flitted & "chatter" as before. Unfortunately, I was only looking at the bird out of corner of my eye so didn't catch if there was any visual display or not. Anyway, it could not have been very prolonged. Then the 2 Birds, I suppose, threw out quite a few Rattles & were silent. Eventually flew off silently

A few more Birds came & "chattered" as "greeting"

Rain stops 4:17. A single Ind is now perched on low post in middle of centre of flooded field

Then I hear an outburst of Rattles from "garden" by hut. Look over to see a Bird (♂?) flying around there. This flying bird is uttering only a few, rather soft, "Tsuplets" or "Gurdrupleta" (Tid-i-dit-it type sound). The loud Rattles are coming from another individual in or near main Regina bed & goes on. Rattles continue. Then I see the Rattler. It is a Red! Flitters Rattle after Rattle. With wings extreme V-D Feathers. Perched on low-bent stem & all I have seen a White-throat at same site on earlier days!) The Red eventually stops Rattles. But continues the V-D Feathers, rather irregularly, for some minutes.

Then I notice that there is a single White-throat perched in Carex on about 1 ft away! Silent. Again no apparent reaction between the 2 species. White-throat flies off, apparently to feed. Red gives no attention. Eventually flies off also. Utters a few Rattles as it does so.

NOTE: The Rattles of this g Bird were remarkably similar to those of the White-throats, Song Sparrow, Towhee and Harden. Did not notice any descending in scale

17:31 A White-throat is heard very near. Utters lots of Rattles. After a few minutes, a second White-throat perches Top Cottonwood 1000 ft. away, also begins to sing. This bird mixes Doublets and Quadruplets with regular, longer, Rattles. First bird flies off. Second bird stays vocalizing. A few seconds later, I see third bird (either ♀ third ♂) White-throat perched in another Cottonwood 10 ft away. Both silent now. Eventually fly off together quiet 17:42.

NOTE: The Rattles uttered by the White-throats today were more musical as described than earlier Normal Pitch Notes. Although the first note may be slightly "accented", no particular Cord

COMMENT: I suppose that the Bright Display of the "o" of the pair of White-throats almost Rattles we hear could be considered an expression of excited, great but controlled, hostility. Unable, or unwilling to attack his rival, he went off and displayed by himself at a distance

17:55 More White-throat Rattles from Cottonwoods

See more White-throats or hear in distance. Birds apparently fairly close together. Both fly off almost immediately.

White-throat birds in small tree. Adult. Does not have Headbobs and TF's. All TF's are V-D And tail is flagged with each flick. The Tailflicks and Headbobs are not coordinated to the one another

Stopping observations 7:15 a m

There is a bright period in the weather around mid-day, but then the rain come back It rains all afternoon and pours all night

December 29, 1978
Mahabalipuram

Still raining this morning. Diminishes briefly ca 6:30 a.m. Thus releases a burst of song in the hotel garden. I also hear some White-throat Rattles in distance. But then the rain becomes torrential again.

Rain finally stops, at least temporarily, in late afternoon. We start out 4:30 p.m. Still cloudy.

Almost immediately hear White-throat "Chuk" Notes. Apparently put off by bird in flight.

Single Pied flies by with Bisyllabic Notes. (This species seems to have come in with the rains!). A few ft further on, see another Pied (♂), land on post in flooded field. Apparently alone. But still utters abbreviated Rattles and/or "Ur-i-did-it" Notes as it lands. Then sits quietly. Doing V-D TF's. Once quite depressed. Then flies off. Utters monosyllabic "Tseet" type Notes.

5:12 Two ♂ Pied is hunting in tussocks over flooded field. Makes frequent plunges. Water cannot be more than 3 ft deep at its deepest. Can't tell if plunges are successful or not.

Three Inds on wires.

But very few White-throats. Have they moved out???

Lots and lots of Green Bee-eaters, feeding everywhere, over both land and water. Quite noisy. Soft Rattle-like notes

December 30, 1978
Mahabalipuram

Rain stopped yesterday evening. Going to try to get to Kanchipuram

and dawn this morning, but I doubt if we will make it.

Don't see may White-throats on road. Lots of bee-eaters and wood swallows feeding.

Ammie pond beyond village 6:25 a.m. Already light. One White-throat perched minute in palm. Flies off and disappears.

No Rattles audible in neighborhood.

6:34. Suddenly see White-throat in full flight display. High. Wide circles and figures-of-eight. With constant quadruplets. Lasts several minutes (2-3). Then the displaying bird swoops down. Joins and/or chases another White-throat flying low. Both birds land in crown palm. First bird to land does extreme Wings-spread as second lands. Little or no Lt. Silent? Both birds rt. Alert. 1 ft apart. Then one bird does extreme WF (moment? Wings-spread?). The other immediately flies off. First follows. Rapid flight. Rather low. Chase? One bird lands in palm. The other tries to land in same place. First does extreme Wings-spread (facing intruder). The second departs, lands in adjacent birds. Both move off, out of sight in next few minutes.

This encounter looked a good deal more hostile than sexual!!

6:43. Now I see that there is a single White-throat sitting quietly on tatus below presumed nest hole. Flies away silently.

A minute or so later, invisible White-throat in bush begins to utter Rattles. Presumably one of the birds involved in earlier flight display-Chase.

6:52. Single White-throat flies in. Perches on wire above pond. Silent. Looks around. Then flies off to distant bush.

COMMENT: The birds are still around. But they haven't made much progress since before the rains. Perhaps they have even retrogressed.

6:58. Pair of Red-Rumped Swallows flying. 1♂ and 1♀. Land on wire over

pond. 1-2 ft apart. Same "Twitter" on landing. Then both feds actively over pond. Going from perch to perch, bushes and wire. Usually quite close together. Occasional Twitters, both when flying and when perched. Occasional V-D TF's while perched ♀ makes one successful plunge. Catches quite large fish. Has some trouble swallowing it.

White-throat on wire several hundred ft away. As usual, the 2 species seem to ignore one another. (Although I suppose that the Pied is "downing out".)

White-throats eventually fly away.

COMMENTS: Pieds seem to feed successfully much more frequently than do White-throats. They also are much more active and expend much more energy in searching and feeding.

The sex ratio seems to be equal in the coral pieds.

Going on 7:15 a.m.

See 1 Pied and 1 Robin, only 2 ft apart, perched on wire over flooded field. There also are 2 White-throats, not close together, across road. Both Pied and Red fly off when bus passes by. One of the White-throats flies off, lands on wire where the other 2 birds were earlier. Then flies off, as Pied comes in (back). Pied lands on wire. White-throat goes off to distant tree. Both birds silent during encounter.

Pied is ♂. Plunges. Catches fish. Swallows it easily. Quite silent throughout. Flew just 1 cts. Porcus.

Twitter on, one single ♂ Pied fishing in large drainage ditch. Utters Twitters and Bisyllabic Notes (Doublets).

Bruf flurry of rain, 8:30.

9:03 Outside Tirrikalli Kundrum. See 2 Hoopoes less than 1 ft apart on high wire. Both just preening in relaxed fashion.

White-throat Rattles in distance. Bird perched high. Wire
Also 2 Birds Jisling in distance (different direction)
Back to pond by Kingbi. Single White-throat on wire over water. Also
3-5 White-throats (not together) in different palms in general neighborhood.
Several of the birds in palms are uttering many Rattles. One bird utters a few
Quadruplets in midst of Rattles

9:23. Rani has started again. Stops again.

Then there is a spectacular Flight Display. Presumably launched by one of
the birds from palm. Very high and very prolonged Very wide circles. "Usual"
Quadruplets. Perhaps also some Triplets. Most of flight is substance, slow.
This seems to be typical. Then the bird suddenly accelerates. Flying horizontally. Continuing Quadruplets. Then it makes a spectacular plunge down-
ward

Probably still creating image. Certainly
still uttering Quadruplets and/or Triplets.
Plunge is slightly 30°-30°. With traces of Rocking
Very Rollercoaster!!! (Although less exaggerated)
Bird lands in crown palm. Certainly alone. Then
utters a Rattle after Rattle for at least 4-5 mins. Then
falls silent. Flies away.

This displaying bird was not a member of the
"Pond Pair" ("PP"). Both PP's are present in pond area
at the time. One perched on talus. Other makes shallow dive in water (unsuccessfully), and perches in adjacent small tree. Then this latter flies to join its
mate on talus. Lands only a few inches away. No greeting display. Both sit

In next few minutes, one or both of the PP's mate(s) visits to nest
hole. Not the same hole visited a few days ago. This one is around corner.
(Actually, there are at least 4 suitable-looking holes in this bank) At least once,

the bird visiting hole seems to be ♂ (it is large and very dark underneath). I think that a bird went into hole for some appreciable time (1 min.?) Each time, after visiting hole, a bird rejoins mate on talus. Never any greeting.

Finally, one of the birds flies away. Remaining bird just sits. No visits. Then flies away also.

NOTE: Apparently, visits to holes (like "demonstrations") occur only when mate is present.

One PP back 1:54. Just sits on wire. (QUERY. Is it possible that the other bird is in hole now?? Could these birds have already started incubation? I don't really think so.)

Bird on wire flies over to adjacent palm. Then away.

There is a Green Bee-eater flying around bank and talus now. Appar. catty feeding. But I wonder if this species will also use same bank?

White-throat back on wire 10:06. Then flies into small tree by bank. Appar. catty ignores bee-eaters (and vice versa). Then flies back to wire.

NOTE: Whole neighborhood is quiet now. Does this pair tend to come to talus, and to visit holes, only (or most frequently) when their neighbors are excited or disputing?

Suddenly 3 Reds appear. Land on either side of White-throat. 2 on one side 10 ft away. 1 on other side only 3 ft away. Apparently no display by either of the species or any of the birds. One of the Reds is a ♂. Another is ♀. I can't identify the sex of the third. The Reds do a lot of "Looking". Crests more or less depressed. I think that this "Looking" is probably simply a hunting pattern rather than a display. The White-throat, on the other hand, does have a definite trace of CR at back of head. Possibly this is an effect of sound?

2 of the Reds start flying around, hovering, and plunging.

Then the second PP flies in. Definitely from far away (i.e. not from inside

nest hole). Lands silently, on tatus, sits. Then flies off to join mate on wire. Lands close beside. No greeting display. How I wish that the incoming bird has small snake (or eel) in bill. Presumably, therefore, the ♂? Stands beside presumed ♀ in alert posture. She makes no effort to take the "proffered" food. Just sits. Then she flies off. Presumed ♂ remains behind. Swallows snake himself.

NOTE: The fact that these ♂♂ birds do so little display when they join one another is a good indication that typical "greetings" are largely or completely absent.

Observations stop 10:15 a.m. as rain starts to come down heavily.

Rain has stopped by the time that we get back to Hotel. Entering our room we get brief glimpse of apparent dispute between a hoopoes on roof top. Red supplanting. Much CR. And harsh sounds (rasping?)

NOTE: Are the hoopoes coming into breeding condition?

There is rain in mid-afternoon, but it stops by 5:00 p.m. I go out for a walk.

Start a sketch of an Ind. Junt sitting.

December 31, 1978
Arabella Peirson

Going to walk from hotel this morning. Weather is clear.

White-throat Rattles start well before 6:00 a.m. Also hear some notes of White-throat "Chak" Notes, presumably, uttered by birds in flight.

NOTE: Some Rattles seem to be louder and more accelerated, more urgent-sounding, than others.

See 2 White throats sitting quietly 1 ft apart on high wire. One flies down to Casuarina in "garden". The other follows and lands on wall

3-4 ft away. Both just sit for several minutes. Then one flies to distant wire, and Junction on. The other does not follow. This pair seems to be well-adjusted, but not very strongly motivated sexually.

The remaining bird of this pair flies down to ground. Definitely catches prey. Can't identify prey. Rather small, elongate shape. Bird flies back to perch. Beats prey. Then flies away.

NOTE: The pounces of this species are apparently always silent. Nothing like the shrillness of senegalensis.

Pale (Mulvus) flies along edge rice fields. Flushes White-throat who flies off with "Chak" notes. The "chak"s of this species may be almost pure alarm notes.

6:30 a.m. Single Red flies by, uttering Doublets. Lands on high wire. Utters nice Doublets with V-D Tail-flicks. Then shuts up. Continues TF's Definitely ♂. Then flies off

Local pair of White-throats back. I shall call their birds "W." Sitting less than 1 ft apart on wall. Then fly off to high wire. Land close together. No greeting. Then one flies a few m. further down wire

Some other White-throat utters "Chak"s in rice field far away. One of the W's immediately "answers" with 3-4 Rattles

Single Red flies in with Doublets - but Twitters. Probably the same one that previously before. Lands 2-3 ft from one of the W White-throats. The W immediately flew Junction down wire. Red just sits with WF's. Flies off. Both W's sit quietly. They really are very dull. Because they have a large territory and are not frequently stimulated by neighbors?

I walk down road. 6:53. Red flies in to high wire. Sits quietly. Then flies on to large Ficus (Banyan) behind shrine. There already are lots of birds rasping "Kaa" type sounds coming from this tree. The incoming Red

immediately becomes involved in much excited chasing back and forth in and around the tree. This is difficult to follow. Especially as the tree also harbors at least 2 Hoopoes (possibly disputing with one another) and 1 White-throat in addition to 1 or 2 other Buds. All I am sure of is that at least 1 of the Buds uttered many long screaming "Kreeaaar"s in flight and also accelerated series of abbreviated chatter-type "Keear kar kar"s — — And once it swooped at a small (chipmunk-like, very common) squirrel. Uttering screaming "Kreeaaar"s as it does so. To my recollection, this is the first redwinged by a Coraciiform that I have seen in India.

Things settle down eventually. The Hoopoes leave in one direction, the White-throat in another. Leaving 2 Buds perched 15 ft apart. Both sitting in unmutualized postures. One silent. The other utters occasional single "Kark" Notes. Not very loud. Obviously very abbreviated, presumably low intensity, versions of "Kreeaar", or, more probably, intermediate between "Kreaar" type notes and "Kuk"s (see below).

Then one of the Buds (the one that had uttered "Kark"s) flies over to Palmyra 30 ft away. Utters long "Kreeaar"s in flight. Then silently.

Suddenly a hawk, probably a Kestrel (also rather common here) flies by. Both Buds fly up to chase it (and swoop?), uttering many loud screaming "Kreeaar"s. Then break off chase. One flies off to tree past my road. The other flies around for a few seconds. Then goes to join its "partner". Rather a long flight. The incomer utters a few "Kark"s in flight — changing to short "Kuk"s. These are remarkable. Might be described as "clucking". Wooden in quality. Not Ringing. The bird must utter 8-10 of these notes in flight. Then switches to (Chatter) "Kreeaar"s as it approaches and lands by "from" "partner". The latter assumes an Oblique or Low-Oblique posture (at an angle to the incomer). Then assumes Bill-

down (BD) posture. Probably followed by BW. Apparently silent
Then both birds sit quietly almost side by side. One flies off. The other follows a minute or so later.

NOTE: In my description of the dog dispute among birds last week, I think that I used the terms "Head-down" and/or "HD", when I meant to say BD.

Down to large pond fringed by Palmyras and Casuarina.
Single White-throat flies off with "Chink" Notes.
A few minutes later, single Attis flies by silently (NOTE: Attis seems to be rather comparable to Cerylle spp. insofar as it is relatively mobile. Is this also true of all or most of the other Alcedini?)
Junction on, 7:53, a single Hoopoe is disturbed by Psittacula parrots. Flies off with hoarse "Kaar" Notes. Not particularly harsh or rasping, but still very Coraciiform-like.
Sun is very bright and getting hot by 8:00 a.m.
Stop 8:15 a.m. Starting out again in afternoon 2:30 p.m. Clear, sunny. Windy. Go to Malabaligwadan for tourist-ing. Start back 4:50 p.m. Weather still perfect.
A few Rollers by road. Very quiet. Nothing (else) of interest.

January 1, 1979
Malabaligwadan

Going to try to get to Kuzhi this morning
Arrive at 6:40 a.m. Already quite light. Go straight to pond. A few White-throat Rattles in distance. PP's not immediately visible.
Long series "Click" Notes in distance. Getting progressively louder

and slower.

Everything very quiet. Then one PP flies in. Lands on wire near love. Utters a few soft Rattles. Then begins to preen. Apparently unrut unkyed. Both above and below wing. Then flies off to bush across pond. Flies away. 6:18 a.m.

Green Bee-eaters feeding from wire above pond.

A PP (back again) on wire. Sitting quietly. Single Attis flies in, lands on wire 3 ft away. No reaction between species. Attis sits, looks down for food, flies far away. A few seconds later, single Pied flies in, lands on wire 4-5 ft away from White throat. Again no reaction between species. White throat goes to another perch. Pied fishes actively. Catches fish. Lands on wire. White throat comes back a few seconds later. Lands 3 ft from Pied. Stands in alert posture, perhaps semi-ft. Then inflates. Pied goes fishing again. Then flies far away. PP just sits.

What has happened to its mate?

PP flies away. Everything very quiet 6:35.

I can see White throat flying around not far away. A PP?

PP flies into crown palm by pond 6:43. Lands silently. Then flies to wire. Lands. With silent ft, even though there is no other bird nearby. (But there is another White-throat Rattling loudly in distance) Then inflates. Sits quietly for some minutes.

Then one other White throats on distant wire. All apparently equally calm. (Note: the weather is perfect this morning. Which does not seem to make the birds any more interesting.)

CORRECTION: One of the other White throats is over about 100 ft from PP over pond. Could this be the mate? Also sitting very quietly.

PP over pond suddenly flies away with "Chuk" Notes 6:52.

Flies nearly Bird disappears a few minutes later.
Then an Alltis flies in to wire above pond. Sits. Looks. Then another Alltis flies in and over far corner pond. First Alltis immediately flies to newcomer. Aerial chase. Apparently silent. Both birds disappear in distance.
Then I hear White-throat Flight Display sounds. Turn around to see one White-throat making wide circle, not very high. Uttering typical Quadruplets (some perhaps Triplets). Being followed by another White-throat 10-15 ft behind. This latter seems to be uttering "Chink" Notes. Usually organized as Doublets. Both birds disappear from sight.
Single Alltis back, briefly, 7:06 a.m. Off again. Flies over pond again a few minutes later. This is an active species.
Alltis back again once more. Utters rather loud "Tseet" Notes as it comes in. Lands on wire. Sits quietly. (It would appear that the Alltis is using this pond more frequently or regularly than before, in the absence of the White-throats. Does this mean that it is unafraid, or attracted to White-throats. And/or that the pond has become more suitable for Alltis and less suitable for White-throats?? Pond certainly is lower now than a few days ago. But probably not lower than when we first visited it.)
2 Birds fly over head. Alltis pays no attention.
Everything very quiet now 7:25. Mourning.
See quite a lot more White-throats on road to Terrinballibundrum. All seem to be very calm.
8:13. Flooded field. See 3 Birds flying around close together. In irregular circles, 10-20 ft up. With Doublets and Twitters. This looks (very much) like a "Trio". (One of the birds is a ♂? Can't see the others.)
Could this be an early indication of breeding???
Then flush a single White-throat from bush. Flies over to another

bush. Utters lots of "chuk" Notes, both in flight and after landing. Not at all Chatter-like. Regular continuous series. "Ka ka ka

incubating yet.

Going for walk this afternoon. Weather is clear and sunny. Start 4:30 p.m.

Hear White-throat Rattles in distance.

Over to palm-fringed palm. Single White-throat flies off silently as I arrive. Then I hear "Chak" Notes in distance.

Back on road. See 3rd on wire. Very dull and stolid.

Green Bee-eater flies up with soft rattle. "Kuk-uk-uk-uk-uk-uk" Nervous alarm. Equivalent to "Chak" of White-throat.

January 2, 1978
Malabaligueram.

Going to walk around hotel this morning. Weather is clear.

White-throat Rattles by 5:53, while it is still quite dark. Then "Chak" Notes in distance.

Then some Quadruplets (or Quintuplets), apparently lop-pended bird. Interspersed among conventional Rattles. Also intergrades between Quintuplets and longer Rattles.

Then all White-throats silent 6:02. (This species does try to get its advertising displays over early. Presumably in order to have more time to look – or wait – for food.)

More White-throat Rattles in distance at 12. Then a single White-throat flies in. Uttering "chak"s in flight. Lands on high wire. Does several rather conspicuous V-D TF's. Then flies on silently.

Single Red flies in. Lands high wire. Sits silently. V-D TF's. Leaves.

Single White-throat flies in a few minutes later. Also sits silently. Then begins to utter Rattles, apparently in response to Rattles by other birds in

distance. Bill is opened slightly throughout whole of a single Rattle. Last note of way Rattles is not only "late" and slightly low, but also somewhat prolonged. And ~~~ In other words sort of a "slur". Compare with Blue-bellied Roller !!! And Sen (?).

This White-throat flies off when bus passes by. Over to Banyan behind shrine. Perches high in crown. Continues Rattle after Rattle for minutes on end. Then also begins to utter Quadruplets, several in a row, in midst of Rattles. At least some of these Quadruplets are uttered with head and bill pointed diagonally upward ↗ Definitely a sort of St. And at contour the Wd Rd Orng Wings spread with St and Quadruplets Obviously an "int. mov." of Flight Display.

Then this bird settles down to more pure Rattles. Apparently ignores Hoopoe moving around close nearby. Then I become aware that there is a second White-throat uttering Rattles in same tree. Apparently some m. away from first bird, but on far side of tree and out of sight. The second bird also continues Rattles for minutes on end. Gradually, becoming more "excited", ie. intervals between Rattles become shorter. At same time, the first bird gradually becomes less excited. Rattles become spaced at irregular intervals. Interrupted by periods of apparently normal relaxed preening.

Then second White-throat begins to utter Quadruplets, still in trees, as well as Rattles. This does not seem to affect behaviour of first bird.

Then second bird begins Flight Display. Usual form, with Quadruplets, etc. First bird does not react at first. But then I am distracted by Birds (See Below!) When I look back, first White-throat seems to have disappeared. Second bird is still continuing Flight Display for a while it is followed by another bird (the first?). But this latter soon separates. Second bird continues Flight Display for a minute or so

longer then gradually goes lower, still uttering Qoadruplets. Then back to the Banyan tree the plunge. Lands in tree (out of sight). Shuts up.

Were these first and second Whistle threats, rattles and/or trills?

Perhaps Qoadruplets are only high intensity Rattles?

While I am watching the Whistlethroats, I hear a burst of Red Chatter behind me. Look around to see single Red perched on high wire. Flew without alone. (But quite possible some other Red in distance.)

Later on, when more Red sounds behind me. Look around to find cages still in progress. Four tops of 7. Grasping by rope. Many lowerings of the tail. Little or no wing waving. One of the birds, about 10 cent and two ?, is uttering "Keeran" Rattles of medium or medium-short length. Copulation apparently successful. Now I see that there is a Mourning Crow perched on same wire but a fair way away. A flight displays between the crow and one of the Reds (almost certainly the ♂) Aerial dives and actual sweeps at attacks. The crow seems to be the aggressor in the engagement. The Red utters loud, long, screaming "Keeeeeer"s. Both crow-flies on, Red flies in different direction.

Was the crow stimulated by the sight of the Reds copulating? Or did the Reds copulate in response to the crow's approach or presence? (Cf the "Rattle copulations" of the Blue-bellies.)

Be that as it may, this copulation cannot have been preceded by much display (certainly little or nothing in the way of copulations).

The other member of the Red pair just sits quietly while its mate is engaged with the crow. And after the flight is over Male has gone out of (my) sight.

About 5 minutes later, presumed mate reappears. Flies straight to bird on wire. Utters buck, rattle-whistle, prolonging-descending chatter as it

lands right beside perched bird. Mounts immediately. Another copulation. Apparently successful. Several downward wavs. of tail. Apparently little or no wing waving. Proceeds accompanied by many (8-10?) "Keeaar" bouts of medium length. Presumably by ♂! Then ♂ flies off. Lands on wire 30 ft away. No post-cop display (not even preening, I think). Both birds sit quietly. ♂ flies away. ♀ "follows" a few seconds later.

All this occurred ca 7:00 a.m.

NOTE: As far as I could tell, there was no possible rival or predator around during this copulation. Which might suggest that the earlier copulation was not provoked by the crow.

One Ind is back a few minutes later. Just sits for most of the next hour. Occasional relaxed preening. 4 isolated bursts of vocalizations. 3 bursts of chatter, not very loud or long. One burst of chatter — 3 or 4 moderate "Keeaar"s. At least one of the Chatters occurred when another Ind was visible, flying not far away.

This bird leaves 8:11 a.m. Then I hear "Keeaar"s in distance.

Before this, I also watched some complicated encounters among Green Bee-eaters ("Green"s). Ca. 7:45. Saw a group of 7-10 inds. perched on high wire by road (several hundred ft. from nearest White-throat or Ind). Very active and excited. Flying about from perch to perch. Supplanting attacks. Shallow swoops by one individual at another. Even lunges but actual fights, grapples, in air. All this accompanied by lots of rather soft buzzy, twanging, probably somewhat hoarse, notes. General effect was of a "Soft Twittering". Possibly these sounds were organized into "chatter" bursts. The great difficulty, however, was that it was impossible to determine which individual birds were uttering which individual notes.

COMMENT: The Twitter of Pied Kingfishers may also be homologous with the Chatters of rollers and Halcyon spp. But it is superficially very different, in sound

effects from this Soft Twittering of the Greens

Another pattern was very conspicuous during the general excitement among the Greens. "Vertical Flights". A bird would rise very steeply on strongly beating wings. Probably for 5-10 ft. Then plunge downward again (usually with pants folded wings?) There could, conceivably, have been hunting flights (and God knows that there were plenty of mosquitoes around!). But I rather doubt it. Quite different from the rather low and shallow flights which are the usual form of hunting by individuals of the species here now.

I think that some (or many? or all?) of the Vertical Flights were accompanied by Soft Twitters by the performing individual.

Are these Vertical Flights homologous with Flight Displays of other Corvid forms? If so, in what way(s)?

One Green did typical Vertical Flight and then landed right beside another, facing same direction. Both birds do repeated and rapid "BW"'s. (I can't tell if their bills actually touched mine. The whole performance looked very ritualized indeed.) Then one mounts the other Copulation. Apparently successful. ♂ lowers tail several times. Also does very very rapid "mechanical" WF's. No waving. WF's also look very ritualized. Copulation probably or possibly accompanied by more Soft Twitters by either one or both birds. The ♂ may have grasped the ♀'s nape, but I can't be sure of this, as the birds were facing away from me.

At the end, the ♂ flew straight off and up from the ♀'s back. Flight probably a form of Vertical. Definitely accompanied by long, soft, "Clucking" Rattle (as described above p. 43). Then he flew a few ft away, landed close beside another (3rd) bird, and immediately began to preen.

NOTE: This is, perhaps, just the sort of species which might be expected to have specialized sexual reactions. Rape and/or pseudosexual threat and/or reversed copulations.

COMMENT: It is easy to explain, in genetic cum sociobiological terms, why a ♂ should copulate with his ♀ during disputes with rival ♂'s. To ensure that his sperm get in first. Or at least block the (later) sperm of the rival(s). But such behavior must have purely sexual (ethological) effects as well. It could well serve to reinforce pair-bonds.

COMMENT: The (soft) Rattles of the species seem to be alarm. Frequent or usual reaction to approach by man. Not always giving the impression of high intensity. The Soft Twitters, on the other hand, probably are quite aggressive. I think that this "arrangement" (relative strengths of different tendencies) in the Ograus as in some other Coraciiformes (esp the "Chak"s and Rattles of White-throated Kingfishers) What was the primitive condition in the common ancestor of the whole order? Possibly Rattles simply higher intensity than "Chatters"???

Write subsequent divergences to more or less aggressive, more or less sexual, etc. etc. etc. ???

In the afternoon, we go to the bird reserve at Vedanthal. Large, artificial but old, lake or reservoir. Clumps trees in center. Herons, ibis, spoonbills, open-bill storks, pelicans, cormorants, ducks, coots, shorebirds, etc. But no kingfishers around the lake or along its borders (a "hedge" of trees at water edge). But there were at least 1 Attthis and several White-throats just outside, by rice fields.

January 3, 1979
Mahabalipuram

Going to walk around hotel this morning starting 9:50 a.m. Weather is pretty good. Only some cloud in sky. More wind than yesterday.

White-throat Rattles and "Chak" Notes almost immediately. Then Voices a general quiet by 10:10 a.m.

6:18 a.m. Sudden outburst of White-throat Rattles by several scattered White throats. Including one invisible wid. ni Banyan behind shrine.

6:23. Hear what sound like 2 brief bursts of Ind Chatter. Look around to see single Ind (presumably one of the birds watched yesterday) pouncing from high wire. Silent Drongo either pounces on same prey at same time or swoops at Ind. Drongo flies away. Ind back to perch. Sits.

Then utters burst of rather short, semi-Chatter-like, "Keeaar"s with D-V TF's. Mate flying by?

Then 2 House Crows land on wire. One is feeding on carrion. Ind flies closer to them. Lands 2-3 ft away from crows with Chatter and, probably, burst of BD. Sits. Crows fly away. Ind back to original perch. Sits.

Then utters 2-3 "Keeaar" notes of moderate length in "Oblique" - St Posture, and Chatters with more or less lowered head (probably not real BD) as mate comes in and lands, silently, 1-2 ft away. Both birds sit.

Then both fly over to feed by young Cocos. Hunting and pouncing. With some rather long "Keeaar"s. One wid is successful.

Then the 2 birds land silently on adjacent fence posts 3 ft apart. Sit quietly. One flies off. The other remains sitting quietly. 6:40.

They certainly don't seem to be very busy this morning! (NOTE: this species does seem to be a late riser. Or at least rather late in beginning very active in the morning. Very different from White-throat.)

Ind flies over to tall Angle wire post. Sits quietly.

Suddenly utters medium length "Keeaar" Notes in extreme St. Changing (rapidly but gradually) to pumping Chatter in semi BD. This must be the mor. of Bowing. A few seconds later, mate flies in. Can't see details, but their certainly is some greeting. Pumping Chatter and what sounds like soft Rattle (Grooming?). By one or both birds. Then ↑ moments. ♂ ♀ lifts tail seem

chatter, but ♂ takes some time to get really going. Sits on ♀'s back. Does lots of WF's, just like Green yesterday. One end. utters a few short and soft "Keeaar" Notes. Then ♂ lowers tail. Cop. apparently successful. ♂ does wave wings conspicuously after lowering tail. Thus Pleas & Cop. is quite silent. Then ♂ flies straight off ♀'s back. ♀ flies away silently.

♀ just sits quietly. No preening. But she does seem to swallow or gulp several times. Could the ♂ have fed her just before the copulation??

Then ♀ flies away. I stop observations 6:55 a.m.

Going to Tanjore (Thanjavur) later

Stop by PP pond, near Kunjiu, 7:35. Lots of White-throat Rattles in neighborhood. One PP sitting quietly on talus. Then flies to wire. Lots flies off. See 2 White-throats sitting 1½ ft apart on high wire 20 ft away. Probably PP's. Probably not incubating yet.

Going on.

9:14. Well south of Chinglepet. Few cars, no pairs Inds. One lands beside other. With Bowing, both birds. Can't hear sounds. Get out of car. See that there are 2 pairs Inds. One on each of 2 posts, 100 ft apart, both using high wires. One end of each pair makes occasional pounce. Apparently unsuccessful. Each time a bird comes back to its mate, there is a greeting. Series of Pumping Chatters. Each begins with "Keeaar"s and then gets rapidly lower and shorter

All or most of these Chatters by incoming bird. The bird being approached usually does extreme Alt. Probably silently (?).

Then one bird lands beside mate. Greeting as usual. But then both Chatter together in BD. Probably with PAG and/or BW. Then one flies at the other. Bursts of "Keeaar"s (not Chattering). Cop. attempt? In any case birds scuffle due to legs. The birds separate. Sit quietly. The other pair doesn't seem to have paid any attention

Going on. See lots and lots of Inds. on trees along road. Species is really very successful indeed.

Also more White-throats, Woodpeckers, and bee-eaters (including a "new" form with a yellow throat — possibly *leschenaulti*?)

January 4, 1979
Thanjavur

Starting back towards Mahabalipuram, via Tiruchirapalli, 7:45. Weather clear some wind

Plenty of White-throat Babblers in rice fields just outside Thanjavur

Large White-throat flies over village, uttering "Chak" notes, to attack another White-throat in swamp. Beat chase. Then pursuer flies up to temple roof. Sits quietly. (This is good evidence that "Chak" is contact strong attack component.)

Along highway see at least 2 Inds. investigating holes in tamarind trees (these trees do seem to have a lot of "natural" holes). Slumbering of nesting.

Inds. seem to be very common in both low wet rice field areas and slightly higher and much drier "uplands".

January 5, 1979
Mahabalipuram

Back here again. Going to work around hotel and road. Starting 5:55 a.m. Weather is good. No wind (yet)

Lots of White-throat Babblers. Also some bursts of "Chak" Notes. Probably also one burst of Quadruplets (by perched bird)

White-throat sounds already becoming less frequent and less numerous by 6:05 a.m.

Jan. 5, 79, II.

(52)

6:15 Hear what might conceivably be 3rd chatter in distance

Then 3 Grns fly, onto high wire. Silent. 2 fly off and land in low bush together. Preening. Look regularly from side-to-side (presumably for prey). Then one flies off to high wire again. Makes flycatching flights (20 ft up) & still silent

Then single 3rd flies in silently. Lands 2-3 ft from Grn. No exchanges between the 2 species. 3rd. just sits silently. Abo ignores crows who come into nearby trees a few mins. later. I presume that this 3rd is a member of the pair that I have watched copulating on earlier days. I shall call this pair "H".)

3rd and crows fly away. Silently.

All three Grns are flycatching now. Level of high wires or higher. Flights are short (as usual). One lands right beside the other. Apparently no greeting. But both preen vigorously.

2 Hoopoes together on distant wire 6:32 a.m.

Single 3rd. back on high wire. Then off again. Silent throughout.

One Grn does bits of Skyet D-U TF's while perched on wire.

Single 3rd. (Ursula) on distant wire.

One Grn lands beside another. One of the birds utters soft 3-note chatter. No upward gestures or movements. Actually, this sounds just like soft version of ordinary Corncrake chatter. Quite hoarse and buzzy. Both birds then sit quietly. Doing constant TF's. All slight. But so continuous that it is impossible to tell if they are really D-U or U-D.

Now I see that both the H birds are present. Settling / Grapnut on high wires I did not hear any sound when the second bird came in.

NOTE: It is relatively cold this morning. Perhaps the birds are just waiting to (literally) warm up?

One Ind flies off silently. Back almost immediately. Sounds might be male. One of the birds utters low, Rattle-like sound! 3 or 4 rapid, wooden-sounding "Kuk"s. Low intensity indication of "Keeaar"s and/or Growling??? One bird also perks toward the other. The latter moves off 2 ft. Both sit. One flies away. Remaining bird (♀?) sits. Then does chatter burst of "Keeaar"s, in "Low Ologue" as mate comes back. Sounds uttered when mate is still 20-30 ft away. Mate lands right beside sitting bird. Silent. (No further) greeting.

Both D-U TF → Mate has prey in bill. Snake? Turns toward its partner. "She" makes no effort to take it. In fact, "she" flies to another limb 15 ft away. Both sit.

It is beginning to look as if the ♀ may control the pace of "courtship".

7:03 Lots of White-throat Rattles and Quadruplets in distance. Quadruplets obviously perched bird.

One H utters burst of chatter. Stimulus not visible.

Everything dead quiet 7:07 Sun is beginning to warm up a little

Neither H pays any attention to hawk (Kestrel?) flying overhead

One H (♂?) utters several short "Keeaar"s in extreme ff. Going into brief chatter as it relaxes into ordinary sitting posture. Mate answers with abbreviated Chatter With 2-3 D-U TF's. Then both sit. Then "♂" flies off. Then the other bird flies off to high post. Utters a few brief, single, muffled "Kaar"s in flight. Almost "Kuk"-like

One White-throat supplants another without any display.

Remaining H flies away silently 7:38. Then 1 Bear Ind Chatters by another bird some distance away. Ind the bird just as it flies up and chases crow (House Crow) with screaming "Keeeaar"s

Inds and crows do not get along together!

Everyone gone 7:43.

Stopping observations 8:00 a.m.

NOTE: Although Greens may go fairly high (15-20 ft above high trees?), they would still seem to be relatively low-hunters. Perhaps the Ashy Wood-swallow (or Swallow-shrike), Artamus fuscus, fills the higher hunter niche here (There seem to be fewer open country bee-eaters here than in Africa.)

January 6, 1979
Makobeli Jaramu

Going to work around hotel and along road again. Starting 5:15 a.m.
Weather is good. Some scattered cloud.
There is the usual early medley of Whitethroat sounds.
NOTE. It is interesting that I am not hearing anything by birds that could be called "song."
6:17 One H Bird has arrived. Sitting quietly on wire. Does several D-U TF's. Ignores crows flying by. Greens.
2 Greens sitting quietly on wire some distance away. Then one does Vertical Flight with Soft Twitter (Creaps). Lands beside partner. No greeting. Both birds just look from side to side. Then one starts feeding flights. Now I see that there is a third bird on wire 20 ft away. Are these the same 3 birds that were in the area yesterday? Are Creaps characteristic of this species also???
6:30. Huge outburst Whitethroat Rattles from Baobab.
All 3 Greens feeding at times, now. One bird swoops at another in forget. Flies previous vocalizations. Probably some soft creaps. Contacts a Soft Rattle
See Whitethroat Light Display with Quadruplets. Then the bird flies down onto top of Baobab (out of sight?). Utters Rattle after Rattle after Rattle. Then flies off, high and straight uttering Quadruplets. Then swoops down, silently

to distant were. To join mate???

Single Ind perched quietly distant were. Could this be an H? If so, have the H's already started incubation???

a:58 Single H lands on high wire with chatter even though apparently alone. e. Stands alert. Does D-U TF's. Flies off silently. Back again. Lands with chatter. Does silent TF's. Off again.

Sun is rising above clouds now.

7:14 Single White throat on distant wire. Utters lots of Rattles and Quadruplets (and a few Triplets and Quintuplets). Apparently quite alone. No special postures or movements with Quadruplets. Then suddenly flies up in Flight Display (Note: apparently still alone.) Next 10-20 ft of Flight Display silent. Then burst begins Triplets (Quintuple). Continues for some time. Then switches to Quadruplets. Flight display is quite elaborate, high and prolonged. Then bird swoops down to high wire. (Wings probably partly closed during swoop.) Then utters Rattle after Rattle while perched. Now I hear that it is being "answered" from Banyan. The Banyan bird also utters Rattle after Rattle. (Note that Quadruplets are not uttered now — when the birds are calling back and forth. Is this significant?) The bird on wire gradually "runs down". Falls silent. The bird in Banyan continues Rattles. As far as I can tell, this bird (also) is "alone". Then the Banyan bird launches its own Flight Display. With Quadruplets also high and prolonged. Eventually swoops back to Banyan.

All this would seem to confirm the hypothesis that at least some Flight Displays of White-throats are territorial advertisement.

While I am watching the White-throats, I hear Ind sounds in distance. "Keeaar" Notes and Chatters. I find that there is dispute in progress in area of cottage. 3 Inds involved. Difficult to follow. But it would appear (from subsequent behavior — see below) that the performers are a pair and an intruder. I will, therefore, refer to them in these terms. The pair may be H (although the area is at least 1,000 m. from their usual early morning "beat").

Jan. 6, 73, III

(56)

When I first focus on the birds, there is an aerial chase in progress. Fast twisting flight in and out of Cavanilla trees. Lots of more or less screaming "Kreeaaar" Shots in flight. One ind. (probably member of pair) following another (probably the intended) soars upward (motionless wings?), 4-5 ft, and then descends diagonally (wings definitely beating now) to resume chase. Then the pursuer peels off. Pursued lands on high wire 20-30 ft away. Sits immobile and silent. Apparently unconcerned. But the appearance may be misleading. In any case, this ind. flies off, out of my sight, a few minutes later.

In the meantime, the pursuer has gone (back) to the 3rd bird. They interact with one another for minutes on end. Some of the interactions are vigorous and/or noisy. I cannot, however, follow them in detail. What seems to be happening, in general, is that the birds are flying from perch to perch. One bird often in apparent pursuit of the other. More twisting flight among trees. But apparently, no soar-swoop performances. (The whole situation is complicated by the fact that several crows and Psittacula parrots are also excited and/or disturbed by the rollers, and are also flying about actively. As far as I can tell, however, there are no interspecific fights.)

The apparent pursuits are accompanied by screaming "Kreeaaar"s.

Between pursuits, the birds perch more or less close together. Sit for some seconds or minutes. Then move on again. Gradually their movements become less conspicuously agonistic. Less like chases and more like "normal" changes in position.

Whenever the 2 birds land together, or one joins the other, there is more display. Usually, but perhaps not always, mutual. These performances could be considered "greetings". But they are quite variable. I noticed the following: ① Once the birds landed together and performed silent Bowing. ② More often, one or both of the birds would utter descending, pumping, chattering as the initial stage of "greeting". ③ Twice

one of the birds raised or spread its wings as the other landed beside it. Probably with chatter. This was very reminiscent of the Wing-spreading of Kingfishers. But perhaps less extreme in form. Always very brief.

The initial phase of "greeting" is usually followed by conspicuous patterns. Probably deceptively simple. One or both birds stands in V. Lots of D-V TT's. Seems looking down at the ground. Sometimes real BD. Several times developing into PRG and/or BV. Some looking away from one another (HF). All rather constrained in appearance. Very reminiscent of the Blue-bellied Roller Caltrengs perhaps slightly more variable or less stiff)

The 2 birds then began to relax. Sit a few inches apart in a more relaxed manner. Then one of them (♀?) flies to another tree 20 ft away. The partner left behind begins to make feeding pounces. 4-5 of them. All apparently successful. Getting large insects (beetles?). Then it flies down for another pounce. Partner flies over to perch just vacated. Feeding bird back, with insect in bill. Lands right beside partner. One or both birds utters soft rattle-like series "Kuk" notes. Then the bird that caught the insect swallows it. Apparently no attempt to pass food to partner.

Then one bird flies away out of sight. Remaining bird sits. Does some (more) feeding.

Incident over by 7:55 am

COMMENT: I suppose that the 2 birds left behind were mates. Presumably the fight with the intruder so stimulated their aggressiveness that they could not refrain from venting it upon one another. A sort of reduction or overflow activity. In other circumstances, it is interesting that their hostility did not result in sexual or pseudo-sexual behavior.

COMMENT: I have just realized that the Halcyon spp. are peculiar among Coraciiformes — or at least very different from Ceryle rudis and Coracias spp. — in that they seldom or never engage in close face-to-face hostilities (much less open

Jan. 6, 77, V.

combat. Why should this be so?

Walking back to hotel 8:05 a.m., see single Ardea purpurea on low-field marshes in shallow lake of flooded field. Feeding actively. Makes 3 plunges (one after hovering). All successful. Prey are very small "minnows". Fish are held crosswise before swallowing. Swallowing often followed by lateral head shakes. These movements do not appear to be ritualized.

The bird does, however, do quite a lot of display from time to time. Both vocal and visual while perched between plunges, and vocal in flight.

All flights accompanied by high-pitched "Insect" Notes. Usually uttered "singly in series" — — — — — These series sometimes interrupted by bursts of accelerated and abbreviated "Insect"s. Probably 3-4 notes per burst. These bursts would appear to be strictly equivalent to the "Chatterings" of some other species (e.g. "Chalk" Notes of White-throat?).

The bird also did many V-D TF's (quite extreme), Head-bobs (HB), and WF's while perched. Usually (not always) synchronized. The general effect of a gigantic hiccough. The effect was enhanced when the bird also uttered a single "Insect" at the same time as the movements. It did this in about 1/3 - 1/2 of the performances.

The courtship is really quite conspicuous. Why should such a non-gregarious bird show such elaborate behaviour while alone? Simply to warn off competitors?

Stop observations 8:15 a.m.

Out for walk in afternoon

4:05. See 2 Ardeas sitting side by side low perch. One head forward and down, as if it were soliciting allogrooming. That is nervous about us. Flies up with Soft Rattle.

5:00 See single 3rd (H) on ground. Hops around for several minutes apparently picking at (or probing into) sandy soil. Gets a lot of insects. Flies up to low perch. Flies back to feeding on ground as before.

January 8, 1979
Bangalore

Go to Lal Bagh gardens in afternoon. Arrive 4:00 pm. Clear and still hot. Lots of bird sounds, but no Coraciiformes.

January 13, 1979
Mahabaleshwaram

Going for a walk this afternoon. Clear, sunny; windy. Starting 4:05 pm. Almost immediately single White-throat lands on low post in field. Head-bobs and defaecates with Squeak (quite Alcedo-like in sound) Then flies on silently.

Quite a lot of miscellaneous bird sound.

An apparent group of 3 Hoopoes moving around 2-10 ft apart.

See a Green swallowing quite a large moth.

4:40. See another Green feeding on moth. Open semi-bare dry sandy slope. (Also seems to be one of the favorite habitats of the species)

5:16. One Hoopoe chases another in air. Pursuer utters loud Rasps ("Aaarch" notes) in normal flight, not displayed. Then pursuer lands on post. Does bouffant extreme CR with one more Rasp. Then relaxes.

One Ind chases another in distance. With "Kuccaaar" Notes

5:25 3 Greens and 2 Hoopoes taking dust baths, in bottle road, fairly close together. NOTE: the local Greens do seem to be a trio. Does this species nest non-communally???

January 14, 1979
Mahabaleshwaram.

Warbling by bottle in morning, 5:55 am

Jan 14, 77, I. (40)

Lots of White throat Rattles. Varying degrees of differentiation of first and/or last notes.

6:05 Single White throat setting guard on wall of cottage. Presumed mate flies in with "chuk" notes. Lands on up Runell fots. Both birds square pair of antennae in caruncula. Mate travels fly off. Still guard flies off a minute or so later. Silently. Returning White throat continues to set on wall. Also quite silent Ga-Rattles. Why? (Isabella letter pair "W")

Won wall utters "chuk" notes, while guarded, when another White throat flies by. Newcomer lands on byflower pots next. Then flies off again.

CORRECTION (?) Nov. 6, 20. I see that second W is perched in Caru a minute after from wall W. Both birds quite silent and apparently relaxed.

NOTE: The white breast of this species is really quite conspicuous in rather dim light. Obviously, not coincidental.

W on wall sets in new fluffed posture. Does several silent HB's. Then flies off suddenly as birds pass by. Mate goes into. These birds are obviously destructive when they are with mates and there are no rivals near by!

6:29. W in Caruncula starts Rattles. Perhaps because another White throat is Rattling in distance? Nov 2 birds bill to bill circle please stay bird getting gradually nearer. Then see a perched on fence 100 ft away, still uttering Rattles. But the bird in Caruncula shuts up. Then 2 birds must, I think, both be W's.

No! Bird on wall continues Rattles. Now it is alternating Rattles with White throat in distance. Bird in Caruncula still setting guard. When a 4th bird flies in. Obviously the usual "chuk" W. Lands right beside first bird in Caruncula. Both silent. But uncover deep seated fast color Hard-flicks. Its mate does BH's. Both obviously males. Then

circumflies 2 ft away to adjacent wall. Does silent ft (restrained), without Wingspreading immediately after landing. Then both W's just sit.

White throats on wire and in Banyan continue their "Song duel". Then Banyan bird switches to Quadruplets. Then begins Flight Display. High and prolonged. Vocalizing throughout. Mostly exclusive Quadruplets. Wire bird continues Rattles. Both W's continue to be silent. The Banyan bird eventually plunges back to Banyan. Wings folded, several times during plunge. Also switches to Rattle toward end of plunge. Lands in Banyan, apparently alone. Continues Rattles. Bird on wire also continues Rattles.

Then wire bird and W's are disturbed by human beings.

COMMENT: Rattle-Flight Display patterns may be, at least in part, territorial "proclamation" or "advertisement". But they may be performed only by birds that are unmated, or at least not well mated.

While these White throat interactions are in progress, I see that there is an H perched on high wire near entrance of hotel. Presumably an H. Just sits quietly. Then suddenly goes into O, utters Chatter. Can't see release stimulus. Then relaxes again.

Some minutes later, ca. 7:02 a.m., hear burst of Corvciniform Raips, Chatter, "Raccaar" Notes, etc., from grove of Casuarina near path. Go over to find general excitement among lots of birds. (Starke???) Crows, Magpies, at least 1 Treepie. Also 2 Hoopoes chasing one another, with Raips ("Acorh" Notes). And a single Ind., almost certainly the other H, perched top Casuarina, uttering "Raccaar" Notes.

Then everything quiets down.

A few Acrocs may have been involved in the general commotion. In any case, there are a few of them (3?) feeding actively from low perches

w/adjacent field a few minutes later.

One Green lands beside another on same perch. One or both utter(s) soft Rasps. Then both BW. See a similar sequence a few minutes later, but this time without BW.

Then I see a single Green give peculiar performance when another lands (mate) flies by, about 2-3 ft away. Utters long series of notes which sound almost exactly intermediate between typical Rasp (Twitter) and typical Rattle elements (i.e. the Rasp and Rattle patterns can intergrade.) And this peculiar sound was accompanied by fairly conspicuous (vertical?) Tail-quivering.

NOTE: I also saw typical TF-ing by single perched Greens. Usually, I think, beginning D-V. D-V phrases perhaps more accentuated than V-D phrases on the average.

The Inds are still around, but I do not pay much attention to them while I am watching the Greens. But then I see an Ind land 3 ft up in low bush. Utters Rattle-like series of wooden "Kuk" Notes as it comes in. This does in fact sound very Green-like! COMMENT: Rollers and (some?) bee-eaters may be much more similar to one another in behavior than I originally thought.

Some minutes later, I see that there are 3 Inds around. Presumably H pair and an intruder. But I can't tell which is which, so I will call them "a", "b" and "c". a and b are perched 1 ft apart on tops high in bare parts. c is 20 ft away, 4-5 ft up, in small dicot tree. All sitting in what look like relaxed postures. All silent. Quite probably eye-ing one another intently.

a flies to ground. Apparently unsuccessful pounce. b utters a few low "Roar" Notes and/or abbreviated muffled Chatter as a goes. a back. Lands silently right beside b, on same part. No "greeting", but b flies away to post 1-2 ft away, uttering Rattle-like "Kuk"s as it goes. a follows silently, again lands right beside b: b immediately jumps on a's back! Apparent cop. attempts. Wing movements. But no tail-lowering (and probably no nape seizure). Attempt obviously unsuccessful (at least as copulation) NOTE: I am fairly certain that the

attempt was also accompanied by some of the usual cap. sounds, but my account is deficient at this point. After only a few seconds, b flies straight off a's back. Both birds silent. b. lands on wire 20 ft away.

As far as I can tell, c just sits and looks throughout.

By 7:25, all 3 birds are sitting. Just 20 ft apart from one another. Then c flies off silently when truck passes. a and b seem to pay no attention.

COMMENT: What was this all about? Obviously a hostile encounter. But who were the opponents? Were a and b mates (the H's) or rivals. I tend to think the latter. In any case, this is another species in which hostile and sexual or pseudo-sexual behavior is (once) closely linked.

After c goes, a and b continue to sit as before. Every once in a while, one of them makes an unsuccessful feeding pounce. Partner usually utters a few buzzy "Kaar" notes when the feeder takes off.

Stop observations 7:35 a.m.

COMMENT: It would appear that, in both rollers and Halcyon buying feelers, that there is an appreciable "lull" between the period of most active courtship and sexual behavior, on the one hand, and the beginning of egg-laying and incubation on the other hand.

In country side later in morning. 10:43. See 2 Pied Kingfishers on high wires by river. One is ♀. Can't see the other.

11:25. Much fluttering on, see groups 3 Pieds. 2♀'s and 1♂. One pair, ♂ and ♀, close together on wire. Other ♀ 10 ft away in Palmyra. Suddenly single White-throat flies in. Supplants ♀ Pied in palm. She flies off with fluttering. But back almost immediately. Lands inches away from White-throat. No response. Every one just sits quietly.

Then all 4 birds fly away. And then 4 other (different) Pieds appear. Fly about excitedly. Lots of fluttering. I think that these birds are 2♂'s and 2♀'s.

Outer afternoon see several Birds sitting quietly in Palmyras in rice fields
9.2 the species entirely does not mind burned habitats

January 15, 1979
Melbrook, Jamaica

Working my hotel in morning starting 6:05 a.m
Heard Mockingbird and other bird sounds. Then the usual period of relative quiet

First Bird, presumably an H, on high wire @ 6:21. Sits quietly, doing occasional D-U TF. Then makes short fly catching flight. Returns successful. Returns to perch to swallow insect (evident by altering). Then flies to low cactus. Makes pounces from there. All silent.

2nd ignores nearby crows

2 Quams into high wires @ 6:30 & silent. Just sat. Then started fly-catching. Usually 2nd flies after landing.

NOTE: As far as I can tell, Bee-eaters have no "Song"

One Quam lands beside the other. No greeting.

One White throat lands beside another on Pawpaw. With Resp. ???? The other immediately flies far away.

6:43 Suddenly 2 other Birds show up in neighborhood. Some Chases and supplants. All silent and unmutualized. Birds perch on high wires between chases. Some brief chatters, one in diagonal semi-lt., while perched. Then 2 of the birds fly off. 3rd remains. Sits. Eventually flies off too.

One Quam lands on high wire. Utters long "Tuk-a-tuk-a-tuk-a....." Rather hoarse in tone. Apparently intermediate between soft Twitter and

Soft Rattle. Hum flycatches. One utters soft Rattle between flights. Hum flies over to join another. Green on low post. One of the birds utters "Tuka tuka tuka tuka tuka ..." Then one flies off.

Single Ind, obviously H, now sitting quietly top bush wire post. Hum. I see another Ind, quietly preening, several hundred m. away.

Nearest Ind utters several "Kaar" Notes, then brief Chatter, when House Crow lands 2 ft away. Then shuts up. Lots, 7:02 a.m.

Hum hear Chatter, apparently by some 3rd Ind, not far away. Is pair H turning into a trio? ???

One Green lands 2 ft from another. With "Kaar" Notes. Presumably a variant of "Twitter", but it could be described almost as a rapid Chatter. Obviously some of the sounds of this species are quite variable. There may well be a progression: (Rasp) → Chatter → Twitter → Rattle.

Well! Well! Well! 7:19. One Ind is sitting peacefully on high wire. Another sitting 150 ft away in small tree. Also peaceful and quiet. Then the wire bird (♀ H) utters Chatter (quite fast and pumping) in a forward Oblique posture. 3-5 seconds later, its mate (♂ H) flies in silently. This is not the bird in tree. ♂ H lands a few inches from ♀. Has mutter in bill. Immediately leans toward ♀. One of the birds (♂ ?) utters "Rattle" (rapid series "Kuk" Notes). ♀ later food. ♂ immediately jumps on her back. She immediately goes flat, assumes hunched posture, and raises tail. Obviously willing. ♂ immediately begins cop. movements. Not perfect at first. Lots of WE's, and side to side tail movements (more or less coordinated), but tail not lowered at first. Also regular, rhythmic "Kaar" Notes (not very fast... — — — — — —) But then he does lower tail and the copulation is apparently successful. Notes continue after tail is lowered. Then the ♂ flies straight off ♀'s back. To post 12 ft away. Silent. Both birds just sit. Not even any preening.

Jan. 15, '79, III

The 3rd Ind in tree just sits quietly throughout copulation (Ind ♀ looking (cautiously) facing in right direction). Then flies away, out of sight, as soon as copulation is over. Coincidence?

Perhaps the H's should be described as a "semi-trio"?

♀ H flies away after 2-3 minutes. ♂ utters brief and soft chatter as she goes. Then sits. Then starts hunting again. Partly out of sight. Then more muffled chatters in neighborhood. Then clear notes of "Rain" Notes. Regular but not very rapid. Look around to see another Ind cop on high wires down road. ♀ in copulation with tail very high ♂ grasping her nape. But her tail is not lowered. And, as far as I can tell (from a rather awkward vantage point), she is making little or no attempt in the way of any tail or wing movements. Then she does lower her tail briefly. Then flies off to perch a bit away. It is quite possible that this cop attempt was not successful. 7:35 a.m.

I assume that these Ind's are H's. Certainly the ♂ seemed rather "spent".

The 2 presumed H's sit. Then one or both begin(s) preening. Once one lands beside the other with food in bill. Then food is not accepted. Then both Ind's fly away.

At this point, I see that there is (still) 3rd Ind in neighborhood. Not sure. But it also disappears within a few minutes. 7:47 a.m.

Stop observations 8:00 a.m.

Salim Ali 1947 The Book of Indian Birds. Bombay Natural History Society says that Ind "Indulges in a spectacular courtship display, somersaulting and meandering in the air to the accompaniment of harsh, grating screams." Also says that nesting season is chiefly March to July

Coraciiformes

October 17, 1981
Mahabalipuram

Going to start out by hotel this morning.
Sky clear. Not very much Dawn Chorus by hotel, at least at first (Lots of human noises. Russians.)
Starting to walk 5:55 a.m. Already light.
Hear one Rattle in distance which might be White-throated Kingfisher.
Also one bout of "chatter" "cha-cha-cha-chak-chak".
NOTE: countryside looks rather green, but not flooded as during our first visit to region.
Out to road 6:09. Hear short burst "Kecaar" Notes. Look around to see 2 Rollers perched side by side on wires. Facing opposite directions. Lots D-V TF's. Notes probably were "greeting". Then one mid. flies to wire 3 ft. away. Both birds sit quietly
White throat lands silently 4 ft away. No reaction.
One Roller flies away silently.
Roller (Indian) 20 ft away 6:12. No reaction. White-throat flies away. No reaction. It looks as if the birds are going to be dull!
I suppose that Rollers maintain pair-bonds during non-breeding season?
Walk along road (direction Madras). See single White throat on wires. Silent and alone. Also House Sparrow feeding on ground. Silent and alone.
6:32. Further on Single White-throat flies in. Lands on wire. Utters 3-4 single, short, descending Rattles. Flies on. Hear more Rattles in distance. This does look like "advertisement". (But now I note that there is a single Roller not far away. It could have been the stimulus for the White-throat Rattles.)
Roller is quite silent and placid.
All this area is written territory of "copulating Rollers" some years ago. Are territories maintained year after year?
Walk on down to "usual" pool 6:45 a.m. Moderately full. See

single Hoopoe perched silent and alone on cut leaf-base of Borassus Palm.

Further on, 6:57. Big flight of dragonflies edge Casuarina wood. No one seems to be paying any attention to them.

7:05. Walking back along road. Small group 4-5 bee-eaters. Little Greens? Perched on wires. Occasional fly catches. Occasional bursts of buzzy-twang-y "Zbrazbrazbra... " Notes. "Greetings"?

One bee-eater gives burst buzz notes while perched apparently alone (although there may have been others nds. flying in moderate distance).

One Roller still on wire near hotel 7:17.

Everything very quiet 7:35 a.m.

Well! Back at hotel entrance. See and hear one Roller in screaming, erratic, side to side flight. "Kenaaar" Notes. Probably lands in distance. Bird left behind (out of my sight) utters descending, decelerating chatter series. "Ka ka ka kaa kaaa kaaa" ---------- or even

--- -- - see bird which probably did screaming flight earlier. Perched pole. Utters single short "Kurr" or "Kurp" notes at frequent intervals. Then flies off to more distant perch Fig tree by shrine. Lands. Invisible. Continues "Kurp" notes. Then does more screaming flight around tree. Impossible to see circumstances.

7:50. "Kurr" or "Kurp" notes resumed again (in tree). These notes probably are abbreviated, semi-muffled "Kerr"s or "Kurrer"s.

Many sounds of the species form a semi-continuum.

There is a lot of activity in next 10 mins. As usual, difficult to follow. Periodic screaming flights separated by periods during which one or more nds. sits (invisible) in fig tree uttering "Kurps".

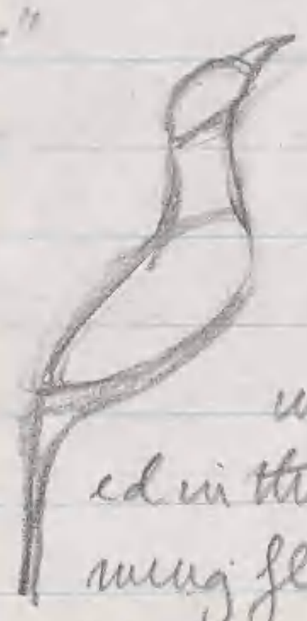
All screaming flights accompanied by "Keeeaaaar"s. Generally circular, around tree, at least once extending as far as road.

Flights not very erratic. With little or no "rocking" from side. (Rocking is difficult to describe briefly. For me, it is characterized by rapid "tilting" of the body from side to side) (without

change of course or direction of flight.)

Flights include several diagonal swoops with set wings. Certainly sometimes in vacuo. Probably directed toward opponent(s) at other times. Swoops moderately long and steep. One swoop preceded by brief soar with set wings. I think that screams continue or even accelerate during swoops. Perhaps stop during soar ???

Once an ind comes over to road in screaming flight. This provokes display by another bird (♀? mate?) who has been perched quietly on wire (unnoticed by me). The bird on wire displays immediately. Goes into semi-St-Lilie "Upright"



and utters loud "Ka-ka-ka-ka-ka-ka...." Notes. (Presumably the nearest thing to a Rattle in the repertory of the species?)

It is my impression that there probably are 4 individuals involved in this series of interactions. 1 or 2 inds. (♂'s?) performing screaming flights. 2 other inds (♀'s?) sitting (1 on wires, the other in fig tree) apart from one another — one on wires, the other in fig tree.

During some screaming flights, I can hear "Kurp" Notes and/or "Ka-ka-ka-ka...." Notes coming from within the fig tree.

The whole thing looks like a hostile territorial encounter between 2 pairs of Rollers. Other birds may also be involved. Possibly the object(s) of some swoops. Redirection? And at least once, a perched Roller in the tree is supplanted by an ind. of another species. I think a House Crow.

Stop observations 8:10 a.m.

NOTE: the bee-eater seen today is the Little Green, Merops orientalis.

October 18, 1981
Mahabalipuram

Going to visit villages this morning.
Arrive Kuzhi 5:48 a.m. Sky is clear. Early light.

Pond is very shrunken. Obviously the area has been dry for some time.

A fair amount of D.C. and I hear White-throat "chatters" ("chak-chak-chak ... Notes) almost immediately. But no trace of Rattles. I.E. birds presumably not breeding.

5:58. More White-throat chatters in distance. Area of scrubby wood. Notice trace of Doublet structures in some chatters. Sometimes series includes "cha-chak"s.

Presumably chatters are purely hostile while Rattles are at least partly reproductive.

All very quiet 6:35. No more chatters. No sign of anything feeding in pool (which looks very stagnant indeed - full of weed). I suppose that White throats must be getting lots of their food on land at this time of year. Although there certainly are some flooded rice fields around (rice half grown).

6:20 Go on to village "tank". Also reduced, but still substantial.

Finally see White-throat perched in rice above flooded rice field. Silent and alone. Just sitting for the moment. No plunges.

6:30. More White-throat chatters in distance.

Countryside looks generally very dry except for rice fields.

Some ploughing in rice fields.

6:45 a.m. Well! Well! Well! Sudden outburst of Rattles in distance. Go over and find that sounds are being uttered by White-throats. Definite. At least 2 inds. Perched in Borassus palms on ridge near rice fields. Phrase after phrase after phrase. Probably over 100. All begin with sharp initial note, continue slightly descending and decelerating. No terminal "slur"s. Phrases different inds. apparently overlapping at random.

Then period of silence. Then Rattles begin again. All very vigorous and intense. Most phrases by one ind. apparently alone, sitting in high alert posture.

6:55. Hear what may be "Triplet" or "Quadruplet" phrases of White-throat in distance. Overlapping Rattles by nearby bird.

Are these particular inds. in breeding condition???

Triplets stop. Rattles continuing 7:02.

Then everything quiet again. Going on 7:10.
More White-throat Rattles in distance. Also "chirk" notes.
COMMENT: this area is not really very far from "usual" pond. The population may have moved only a few hundreds of meters.
Driving toward Tirukkalikundrum. 7:20. Find single White-throat perched wires in open plain - small bush area where there is certainly no standing water. Makes one abortive plunge toward ground. Silent. Then flies off the distant wire.
Further on. See many more single White-throats on wires. Some on dry sticks. Others above rice fields.
8:06 a.m. Region of many rice fields just outside town. Hear many White throat Rattles in distance.
8:13. Further on. 2 Pied and 1 Whitethroat perched wires above small pool in pasture. Pied are 1♂ and 1♀. Perched 3 ft apart from one another. Whitethroat 6-8 ft further on. All 3 birds peering down intently. All silent. Then ♂ Pied flies out, hovers, then flies far away. Whitethroat disappears as soon as ♂ Pied moves. ♀ Pied remains behind. Quite placid.
We pass through the town of Mahabalipuram itself on the way back to the Golden Sun. Lots of Little Green Bee-eaters on wires. This species does seem to have a peculiar distribution in the region. Why is it not more common around the interior villages.
NOTE: According to Mr. R, the region usually has 2 rainy seasons July-August and October-November. But the monsoon seems to have failed this month.

October 19, 1981
Mahabalipuram

Going to villages again this morning.
Arrive Kuzhi, ride Borassus palms, 5:50 a.m. Slightly overcast. Calm. Some D.C. But no White-throat sounds for the moment.
Then hear first White-throat chatter. All doublets (3 pairs).
NOTE: There are masses of wood swallows around here. Presu

malily "replacing" bee-eaters.

5:59 a.m. More White-throat chatter in distance. Rather slow. Only partly doublet.

The White-throat that was Rattling so intensively yesterday does not seem to be at the same post today 6:03. Perhaps because there is a pair of Kites flying around?

More White-throat Chatters, only partly doublet, in distance (rice fields)

COMMENT: Whatever the local situation may be, Rattles do not seem to be common in the earliest morning.

6:25. See single White throat on wire over rice field. Silent and alone. Flies off silently.

Then single Roller lands on wire over bare ground. Silent. Does many D-V TF's after landing. Then just sits.

See 2 White-throats on wire over rice field. Silent 20-25 ft apart but presumably a pair.

Roller has flown away silently

Hear first White-throat Rattles, in fair distance, 6:43. (Sun has just come out from behind clouds.) Phrase after phrase in continuous succession for several minutes. Phrases apparently (largely) by single bird.

Rattle still continuing 6:50. Then switch to quadruplet-quintuplet phrases (These are, of course, essentially especially abbreviated Rattles.) Then back to conventional Rattles. Then a loud outburst of chatters. The birds are much too far away from me to be visible, but this does sound as if it might be a territorial dispute. Presumably high intensity chatters seem to end dispute. Silence falls.

7:06 a.m. Burst of Rattles on this ridge. Probably by same bird seen and heard yesterday. Now perched 30 ft up in broad leafed tree. Apparently quite alone for the moment. Utters phrase after phrase. All phrases perfectly conventional and long. Some bird in distance utters one Rattle in reply, but nothing more for the moment. Nearby bird continues Rattles for some minutes more. Then launches itself in flight. Launch is silent. Then bird utters one conventional Rattle, and then begins quadruplets "Tit-ti-tit-trip" 4 note structure

is definite. Circles 50-75 ft in air, then follows irregular figure-8-eight course, uttering Quadruplets all the way. Then utters one Chatter and swoops silently downward out of sight.

This performance stimulates pandemonium. Lots of flying back and forth for next 4-5 minutes. Very difficult to follow. Probably 3-4 birds involved. Lots of Quadruplets in flight. Also Chatters. One loud Chatter definitely when one bird chases another. Definitely by pursuer. Some conventional Rat this when an ind. perches briefly between flights and chases. (Also a few Quadruplets while perched ???). Chatters are not particularly doublet in form.

Then birds seem to scatter and everything calms down.

This must have been territorial dispute of some sort. Provoked by intrusion? And/or by "advertisement" of first Rattler? More likely the latter than the former, I think. (A choice has to be made).

Everything very calm 7:30 a.m.

Going on toward Thirukkalikundram (really correct spelling) 7:37 a.m.

NOTE: the official name of the town on the Police Station is: THIRUKKALUKUNDRAM.

October 20, 1981
Mahabalipuram

Going to work around hotel this morning. Starting 5:45 p.m. Partly cloudy but already quite light. Very quiet. Almost no DC.

Find single Roller on wire usual area 5:55. Sitting semi-hunched. Silent. Does several D-U TF's. Flies away. Utters 1 soft "Kurr" in flight Apparently lands far away

Then hear chatter-like burst Roller "Kwarr" Notes in distance in another direction.

6:03. Suddenly see Roller on wire not too far away. Obviously trying to swallow some relatively large prey. Many D-U TF's. Capture must have been silent. Then this bird flies 30 ft away, lands right beside another "Kerraar karr karr karr" greeting notes, presumably by newcomer,

during or just after landing. Then newcomer stands silently in "V" posture. The other bird assumes relaxed. Newcomer flies off silently. The other bird flies off in same direction a minute later. Both silent in flight. Flies mutual terminated pair.

Walk down by rice fields. Again clouds of dragonflies without predators.

6:28. Back to road. See single Hoopoe perched on wire. Flies off silently. Probably frightened by kids.

Then see that single Roller is back on wire, one of its usual sites. Silent and relaxed.

NOTE: A thought has just occurred to me. Could the greeting encounter between ♂ and ♀ seen earlier this morning have involved transfer of food ???

Roller flies away silently. A minute later, single Hoopoe appears on same wire. Also flies off when small falcon passes by.

NOTE: There would certainly appear to be fewer White throats in the general hotel region now than during wetter periods. Or at least they are much less noticable and/or persistent. Perhaps some birds are not obligatory residents ???

Everything very dull 6:45 a.m.

Roller back. On pylon across road. Sitting quietly. Preens. Then flies off silently again. Then I hear some "Kwaaa" sounds down road.

7:11. Slightly down road. Hear buzzy notes. Find group of at least 10 Little Green Bee-eaters on wire. One bird, slightly isolated from others, utters series of metallic "Kic" notes (only slight buzzy undertone) in rapid succession. In alert posture. Response to another bird, flying some in, away?

Then everybody just sits.

Ah Why? Now I see that there is single Roller (semi obscured by Pylon) sitting in midst of bee eaters. About 3 ft from nearest bee-eater. No sign of hostility. Then 3 parrakeets fly in. Land 3 ft away. Very noisy. Bee-eaters pay no attention. But Roller flies away silently. Coincidence?

Bee eaters fly catching 10-25 ft up.

When perched, neighbors sometimes fence with bills. Probing with buzzy notes.

Stopping 7:40 a.m.

October 24, 1981
Rangoon

Going to walk around grounds of Inya Lake Hotel this morning. Impossible to tell if there is much D.C. or not. There is a huge and very noisy roost of crows just outside my room.

Starts to get light ca 5:20 a.m. I go out 5:30. Still not full day. And crows are still deafening. Walk down to edge lake. Lots of water hyacinth and many other plants. No immediate sign of kingfishers

6:28 a.m. Finally see kingfisher on far side of lake. Flying low over water. With "chak" Note chatter. Including some doublets. Lands silently on post. Then disappears from my view.

This seems to have been White-throat

6:48. See what is obviously same bird flying in same general area. Silent now.

Also see single Alcedo — probably atthis — perched quietly on another post some considerable distance away.

Notice how conspicuous is blue on back both birds. Presumably "warning" to other kingfishers.

Stopping 7:00 a.m.

October 25, 1981
Mandalay

Going to drive along road to Maymyo this morning. It is lightly ca 6:00 a.m, but we are late in starting. All power out in town. Finally get off 6:12. Weather is fine and clear.

Nothing of interest on wires in outskirts of town.

Lots of rice (well grown) and streams (some swiftly flowing). Lots of birds in general. But mostly passerine.

Getting to slightly more hilly country 7:05. Streams here are really fast. Then start very steep ascent. Slopes covered with low dense forest and scrub. Lots of bamboo. Looks second growth but perhaps merely edaphic.

NOTE: According to Denver, rainy season here is May-October. Rains just coming to an end now.

9:10. Walking around lake at Maymyo. Very bare. No kingfishers. Perhaps because there are no suitable perches by water.

Then on to Botanical Garden at far end of lake. Here there are some perches. But still no kingfishers.

Then on to small marsh with stagnant water, lots of dead trees. No birds of any kind here!

Leave Maymyo 10:15. Start back down to Mandalay

get back to Guest House 12:00 m.

Afternoon is incredibly hot, humid, and airless. Surprisingly enough, however, I hear lots of Rattles at various intervals (e.g. ca 12:30 and 3:00) from Guest House grounds or, perhaps, most across street. Loud and metallic. Sound very much like White throat.

But there is no trace of "dark" Note Chatter.

3:37 p.m. Hear White throat type Quadruplets from tree in garden. First White-throat-like Chatter, including doublets, 4:25 p.m.

Going out myself 4:35 p.m. Sun is almost setting. Clouds coming up. And, again, I see and hear nothing of interest.

October 26, 1981
Mandalay

It poured rain last night. Also a little early this morning. I am going out for a short walk 8:10 a.m.

8:20. Sun trying to break through cloud. Hear rattles weak but otherwise kingfisher-like Triplets and Quadruplets in garden. Go over to see. I find that the sounds are being uttered by long-tailed babbler-types (Turdoides?). A group of at least 5 or 6 birds 3 ft up in hedge. Associated with small chipmunk-like squirrel.

A few minutes later, the group of "babbler"s flies up into tree. Some birds utter Rattles in flight. Definite. But incredible. White-throat-like in sound! These must be the birds I heard Rattling yesterday.

200

But who uttered the single chatter heard yesterday?
In any case, it is obvious that Kingfishers really are rare in this region.
Why ???
Walk along mont for a while. Then stop observations 9:00 a.m.

Coraciii. 276 (1)

Mahabalipuram
January 5, 1987

Driving out from Madras ca. 3:00 pm. See several Inds (Coracias benghalensis) on wires. Apparently single.

Later see single White-throat top Casuarina in hotel garden.

Rain seem to have stopped some time ago. Now it is clear, windy, relatively cool. Almost perfect!

Go for walk by hotel 5:05 pm See single mid. 1 flt up on cut stumps in pasture. Single Hoopoe feeding on ground 10 ft away. No interaction.

Another single Ind. top thatched roof.

O sees White-throat in distance.

Single White-throat on wire by usual small house.

5:41. Two White-throat R's in distance.

COMMENT: At least the White-throats and the Inds. seem to be in the same places as in earlier years.

Mahabalipuram
January 6, 1987

Going to work around hotel this morning. Starting 5:55 a.m. Just getting light. Sky with some cloud.

Several musical common bird sounds from 5:58. Then one White-throat R in distance.

A few more White-throat R's in next few minutes. One series of "Chak" Notes. Then quiet. Birds do not appear to be breeding now.

6:45. Single White-throat on wire silent. Ignores mynahs and pigeon. Several R's in distance. Mate?

Coracia, Jan. 6, 1987, II.

R #4A (2)

6:52. Single Ind. feeding on ground. Short flights from low (1½-3 ft) posts. Some pounces successful. All quite silent. Bird apparently alone.

Another single Whitethroat on wire. Silent.

One short burst "Kwaar" notes by Ind. 7:11. Can't tell why. This bird is feeding actively and almost continuously, using a variety of low perches, both posts and low coco palms.

Very light brief sprinkle of rain 7:15.

Suddenly see crow chasing Ind. Twisting and turning low over ground. Chase lasts at least 30 secs. Ind utters several low "Kwaar" notes. Then breaks away. Crow abandons pursuit.

A few minutes later, see Ind being pursued by 3 crows. Another low twisting flight. More soft "Kwaar" notes. Again chase lasts 30 secs. or so.

Another few minutes later, O sees third chase of Ind by crow.

There may be 2 Inds here. At least several thousand M. orpar. Both feeding on ground by pounces from low perches. And both still feeding actively and continuously.

2 Whitethroats perched on wire 12 ft apart. Silent. Ignore pigeon perched between them

Back to hotel 7:43. Hear 2 scattered long bursts of "Chak" notes from adjacent casuarinas.

NOTE: I forgot to mention that Inds usually did several conspicuous D-V tail movs. immediately after landing on perch.

NOTE: crows seem to ignore mynahs.

8:13 See crow chasing Psittacula.

Starting out from hotel again 8:17 Day is turning out to be gray. Almost immediately, hear one Whitethroat utter 2 series of "Chak" notes. These series are long. At least a dozen notes per series

Coraciii, Jan. 6, 1987, III

278 (3)

8:50. Burst of White throat "chaks" by pond. Followed by series of R's Obviously 2 individuals involved.

Further on. More "chak"s. Short series (2-3 notes). 0 records.

9:14. Group 4 bee-eaters on wires. Largely green, golden brown cap, black mask, blue sides throat. Feeding low. One actually picks up insect from ground. Lots of twittering. Actually series of trills by both birds. 0 records.

More short series "chaks". 0 records.

See single White throat 7 ft up bare casuarina. Silent. Flank feathers fluffed. They look light buffy or caramel. I sketch the bird.

Going back. Apparently single bird in same general area as earlier in morning. But now it is perching from wires.

NOTE: I think that the bee-eaters seen today were "Little" Greens, Merops orientalis.

Leave hotel again 4:50 Weather clear now.

5:14. See single White-throat perched 1 ft above water of pond. Silent. Then flies off from palm crown to palm crown. Utters irregular series of "chak" notes in flight. Suddenly plunges down into water from top of tall palm. Bathing? Then flies away silently.

See single roller on wires

Some bee-eaters hawking for insects in neighborhood.

There is at least one hoopoe (probably several in fact) in the neighborhood. Always silent and alone. Ignored by both rollers and kingfishers.

Arrive back at hotel 6:15 p.m. Certainly no evening outburst of coraciiform vocalization.

NOTE: the manager here says that the monsoon was very poor this year. Quite in contrast with 1978-79.

I still wonder why there are no Eurystomus here. The environment looks ideal.

Coracii, Jun 6, 1987, IV

249 (45)

6:25 p.m. Single White-throat utters long series of "chak" notes as it flies past our balcony. This is late. It is quite dark now.

"chak" notes certainly are an aerial pattern for the local White-throats here now.

Malabaligurram,
Jun 7, 1987.

Going to work along road to Kuzhi and Tirri this morning. Start out 5:30 a.m. Still quite dark.

Hear several bursts of White-throat "chak" notes along road. 0 records. Then, 6:15, quite light, see single White throat perched 12 ft up on wires fold well grown rice. Ordinary sitting posture, slightly alert. Utters 3 series of "chak" notes. Fairly long. No special movements. Then shuts up.

I.E. this bird is using "chak"s as song.

The bird does not react to other series of "chak"s by another bird on wires several hundred yards away. The two birds may be mates.

Third bird utters "chak" series in distance. No visible reaction from other two.

Then first utters another series of "chak"s.

None of these series is overlapping NOCA.

First bird still just sitting 6:27. Finally flies off silently. Back a few seconds later. Large insect (bee ?) in bill. Lands on wire. Several slight but definite V-D tail bobs. Then flies off to adjacent tree.

Some more series of "chak"s in next few minutes. Then at least 4 R's at irregular intervals (bird invisible in tree, but identification is certain).

6:36. Now utters are 4 White-throats on wires. Two yds. 10 ft apart.

Mates. The other 2 mbs. are several hundred ft away from presumed pair But on opposite sides!

Population of White-throats is dense.

Three R's in next few minutes. 0 records. NOCA.

NOTE: this is precise area where long dispute among 3 rollers was seen in 78-79. But the rollers seem to be absent now.

NOTE. None of the R's today has had any Intro.

Everything quiet 6:50.

0 sees several pounces by White-throats. Can't tell if they are successful or not.

6:51. White-throat has large insect in bill. Swallows prey without battering. (Of course, wires are not ideal sites for battering)

Then hear brief burst roller "Roar" Notes not far away. NOCA.

More White-throat R's in distance. NOCA. Phrase after phrase

One "Chak" series by White-throat in flight. Wings beat continuously. No special movements or postures. Nor any obvious "recipient" "Chaks" in flight do not often seem to be directed to anyone in particular. Just "advertisement" and/or general "nervousness"

Is frequency of R's positively correlated with crowing? Are R's higher intensity and/or more sexual than "Chaks"? Perhaps the former.

Sun is above clouds on horizon 7:03 Beginning to warm up. and birds are quieter now.

Then still more R's in distance. All NOCA as usual.

7:14. Another area, outskirts of Khurji. More White-throat R's. Then more "Chak"s. All NOCA Nor are there any overlaps among mbs of same species

Single (Little) Green Bee-eater Now were over well grown rice. Preening quietly.

7:30. Usual Khurji pond. Mudras in 78-79 Only slightly smaller

Caracie, Jan. 7, 1987, III. 281 (6)

Two White-throats on wire. Obvious mates. Quite relaxed, only 4 ft apart. Both fly away together. Both silent

7:45. Further on. Relatively bare area. See single roller on wire. Ignores Red-pie 30-ft away. Then flies away silently

Further on, see roller (same kind?) on wire. Doing slight U-D Tail bobs. Balancing? Flies away silently

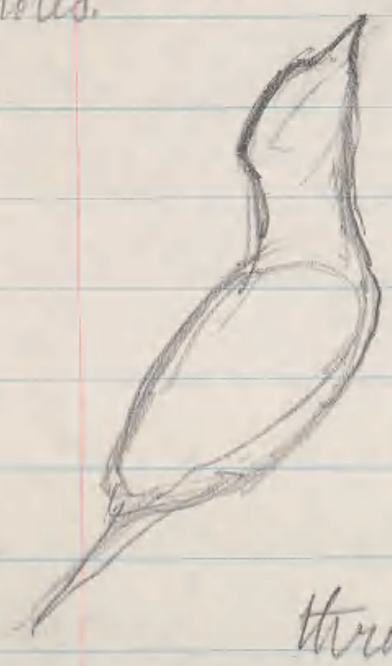
Go into Terri for breakfast. Then back again 8:30. See single White-throat on wire over rice. A single Hoopoe 15 ft away. Single roller 30 ft away on other side. All 3 silent. Ignore one another.

Hear White-throat R's in distance. Also one brief burst of roller "Kaar" notes. Both NOCA

White-throat is giving R after R. All NOCA 8:36. Still no Kaar-notes. Most phrases appear to be "running down", getting slightly slower and lower in pitch.

Roller making balancing movements of tail. First U-D. Then D-U.

See 2 rollers on wire. Only a few ft. apart. Quite peaceful. Mates. Then one suddenly does 8ft. Quite extreme. With brief burst of rapid, pumping, soft "Kaar" notes. Then relaxes. Both birds continue sitting and balancing.



9:25. Back to area where White-throats were recorded earlier this morning. Still a few R's in distance. NOCA. The birds here certainly seem to be different from the birds near the hotel. Why? More crowded? Different phase of annual cycle?

9:29. Single roller on wire. Silent and alone. No White-throats around at the time (Or audible, for that matter)

9:42. Obvious dispute between 2 White-throats. Lots of chasing with "Chak" notes. At first somewhat irregular series. Perhaps trace of triplets. Then regular series sharp emphatic single notes — — — — — —

Records. NOCA throughout. No R's.

Coracii, Jan. 7, 1987, IV.

NOTE: Seen from underneath, the tail of Ind is pale blue tipped with a terminal dark blue band.

Arrive back at hotel 10:00 a.m.

Out again 4:45 p.m. To pond near hotel

0 sets one White-throat chasing another in air. With irregular series "chak"s

5:15 See single White-throat perch crown of Palmyra (Borassus). Silent. This is a tree in which bird perched yesterday. Then the kingfisher flies off as we approach. Silent. I.E. "chack" is not "simply" a flight call.

Single Indian Roller flies by silently

Still no Eurystomus

Mahabalipuram
January 8, 1987

Going out to Tirri again. Starting late. Hear White-throat R's along road. Arrive culvert area where pair of rollers seen yesterday 6:15 a.m. Some DC. But no Coracii.

6:21 Single Pied Kingfisher flies overhead. Uttering "Isect" notes.

Single White-throat on wire. Flies off. Around area. Series of "chak" note in flight. No obvious recipient

There are 2 brief series of what sound like roller "grunts" in neighborhood. Can't see bird. Then finally discover it. Perched on wires over rice. Just sitting. Looking side to side. No tail movements. Suddenly flies off around area. Does at least 3 aerial displays. Flying up to 40-50 ft, beating wings. Then plunges down, rather steep angle

0 records (sounds are clear). Finally lands another set of wires over rice. Sits quietly

Then we see that there is another roller on same set of wires 200 m. away. Sitting quietly. During next few minutes, there are 3-4

Coracii, Jan. 8, 1987, II. 283 (8)

"Chatters" Series of abbreviated, pumping "Kaar" Notes Perhaps 6-7 notes per series? Series definitely uttered by both mds. But never together or even in apparent response to one another. One series definitely provoked by appearance of kite flying low overhead. These birds are obviously paired.

While I am writing this, one bird flies closer to the other. The 2 sit 3 ft. apart. No "Greeting" Both sit.

Then O sees 3rd roller on wire 1000 m. away. Setting quietly.

One member of pair flies down to ground. Can't tell if it gets grey or not. (ground is rather dry pasture.) Back to mate. One "snarling growl" as Greeting O records.

There is a single Pied Kingfisher fishing in distance.

All quiet 7:02 a.m.

Third bird arrives. According to O, one of the members of the pair uttered a couple of "Grunts", i.e. muffled "Kaar" notes, at the same time.

Single roller ignores nearby drongo.

According to locals, the Tamil name for these rollers is "Rapi."

Also according to them, the birds vocalize in the evening

7:15. One member of Spare makes feeding pounce. Gets insect. Back to mate. No Greeting. Then one md. flies silently to tree lots. Utters miscellaneous "Kaar" and even "Kreeaar" Notes. O records. Quite a lot of notes. All more or less low intensity. One trace of Scream. Then falls silent. Then "abandoned" mate utters one/series "Kaar"s ("Chatter" type). Also falls silent.

There are 3 Pied Kingfishers in area.

There also is at least one White-throat in general area. Never close to rollers (or Pieds). Utters one series "Chak"s

Everything very quiet 7:37. Only one roller around.

NOTE: Distribution of colors in roller wing when perched. Dark blue band of wing (carpal joint). Then rather long stretch pale blue. Then rather narrow stripe of

dark blue (bases of primaries ???), thin short streak light blue again (probably outer "fringes" of primaries.

Starting back 7:50. Some cloud coming up.

Single White-throat on wire. 0 photos.

Later on 0 photos Ind. Roller on wire. Silent and alone. Makes one feeding pounce. Also silent throughout.

8:43. Area where White throats heard and recorded yesterday. At least 2 (probably 3) birds still in full spate. Rafter R. Forms as previously described. Never any Intro. Successive notes progressively slightly lower and slower. Sometimes almost a trace of "slur" at end. ~ Two mls singing in trees only 50 ft apart. Usually not overlapping. When overlaps do occur, however, they appear to be random or semi-random. 0 records.

Start out again 5:00 pm. Everything clear and calm.

See single Roller on low perch in pasture. Very stolid.

Quite a lot of hoopoes around. Almost always single. And silent. Once, 5:58 pm. I did see 2 mls close together 3 ft up in bush. Much jerking of head forward and back. But little or no CR. And still no sounds. Both mls. flew off silently. More or less same direction.

Nothing else of interest.

0 has been to a village: Sees low intensity dispute between Ind Roller and mynah. On ground. Mynah more or less supplanting roller! Roller silent throughout. These rollers are remarkably non-aggressive to birds of other species at this time of the year!

Mahabalipuram
January 9, 1987

Going back to roller area near Siva this morning

Coracii, Jan. 9, 1984, I. 283 (10)

Arrive 6:00 a.m. Just getting light.
White-throat R's begin 6:05. In distance, but O records. Then some "Chak" Notes in distance.

1 single White-throat on wire. Silent. Suddenly flicks wings out. Twice. Movements quite extreme. Display. Then I see that there is a second White-throat 15 ft away on wire. Both just sit.

Rollers still absent, or at least invisible and inaudible 6:24. Sky is cloudy and day is not yet bright.

One of the White-throats catches insect while I am not looking. Back to wire. Silent. Does several V-D Headbobs, bottering and/or BW movements, one conspicuous V-D Tailbob. Sits

Two rollers appear 6:27. One utters "Kreeaaar" Notes as it comes in. Then sits. Utters several brief single notes. More or less "Kak." Then one "Chatter." Both sit. Another "Chatter"

No interaction between roller and White-throat 35 ft away. Everyone sitting quietly 6:31.

More "Chatter"s by both rollers. (Presumably ♂ and ♀).

No interaction between rollers and adjacent animals and doings.

Suddenly White-throat flies off. Utters "chaks" in flight. Lands between the two rollers. No visible interaction.

Several more Chatters. Apparently birds are answering one another. "Contact calls". Each Chatter followed by low-soft, fairly long, "Growl". Shades of BB Rattle-Burr! According to O, "Growl" is given in "stretched" posture "Alert"?

One roller shifts position. Then does several V-D tail moves.

One roller flies off to wire across road. Silent. Remaining bird sits. Then utters brief Chatter. Vocalization is accompanied by BV or semi-BV. (This is what O meant by "stretch." Then second bird also flies across road. Lands a few sec. from

mate. No Greeting.

Then, 6:39, one mid flies away. Happy flight. Utters single "Karr" notes at regular, rather rapid intervals. Then switches to long "Kreeaaar". According to Q, this is during brief dispute with 3rd roller

Then my observations become chaotic. There obviously are 4 mids here, 2 pairs. Members of same pair sit close (1-3 m) to one another. Different pairs are at least 100 m. from one another. Both pairs usually on wires. Then one pair flies off to tree 500 m. away. Utters long screaming "Kreeaaaaar"s in flight. Not particularly loud. Records. All birds are silent for a few mins. Then one bird of trio pair flies back to its old spot on wire. Silent. Then second bird from tree flies to join mate. Lands a few inches away. Elaborate Greeting by one mid. Bowing. Quite extreme. Top position is near St. Bottom position almost BD. At least 9-10 Bows. Bows accompanied by D-V tail movs. Also extreme Tail goes D (and forward) as head goes down (? thinks). Tail also is widely spread with each D Revealing color pattern clearly. All this is accompanied by medley of hard, short "Karr" type notes. Irregular. Not typical chatter.

Then both birds relax.

Some preening back and forth in next few minutes. With variety of sounds. Nothing very unusual.

Some feeding pounces. Pouncer always rejoins mate. Usually little or no Greeting. Once a brief burst of "Kreaar"s without special movs.

One pair flies off. To trees. Out of sight. Behavior of remaining pair is curious. They had been sitting 1-3 m. from one another. As soon as the other pair disappears, one mid. of remaining pair flies to join its mate. Lands very close, perhaps touching. Silent. Is this "touching base"???

SEE BELOW

By 7:30, all 4 rollers have left wires. Almost immediately, single White-throat appears in same area for its activity. Then males feeding pounces.

Utters Quadruplets as it goes down. But no trace aerial display
White throat disappears. Rollers back. Some low intensity vocalizations.
O records. Also sees 2 low intensity up-down aerial displays
NOTE: All Pounces seen today, by rollers and by White throat, were to pasture. Gray cloud cropped.
Everything quiet 7:45.
See pair of rollers on wires across road. One joins the other. Elaborate Greeting. Bowing. Tail moves. Tail spreads. As described above, I think. But briefer. Accompanied by 1-2 rather rusty "Kraa" Notes. Then one vocal. flies away silently. Probably further down there.
Bowing obviously High intensity, but regular.
Breaking off observations 8:00 a.m.
Back to roller area 8:52
Two Whitethroats on wire, 5-6 ft apart. One flies a foot or so closer to its partner. Lands. Sits. Does 2 lateral wing flicks, like bird seen earlier. Note: their flicks are essentially horizontal and very rapid. Quite different from more vertical, often more prolonged spreads of Ten and Mal. Whitethroats silent throughout. O photos
Rollers are hidden or have gone.
Go on back to best Whitethroat area 9:20. A few R's, one series of "Crack" Notes, in distance. Nothing much.
Further on, region by pasture, single Red Roller on wire. Silent. O photos
NOTE AND COMMENTS. O saw something very interesting during the dispute that she followed while I was writing. She thought that it might be copulation or pseudo-copulation. But she is not sure that there was actual mounting. At least the birds were very close together. As incident described on previous page. Perhaps I should call this pattern "Cuddling" O says that her incident was accompanied by lots of vocalizations. Presumably variations of basic "Rasp"

Coracie, Jan. 9, 1987, IV.

288 (13)

The two birds that engaged in Cuddling were mates, and they were disputing with neighboring pair. Again the phrase "touching base" comes to mind.

Presumably the pseudo-copulations of Blue-bellied Rollers evolved from something like Cuddling

Have I seen anything like Cuddling in abyssinica or naevia?

I went out to photo this afternoon. Three times she saw crows chase or supplant 2nd Rollers

NOTE: Krishna says that the monsoon was about as poor at Tirrukali Kundrum (see below) as at Mahabalipuram. So the difference in phase of the birds at Tirri and Mahabalipuram now must be due to more subtle factors

NOTE: the name of Tirri is written (transcribed) in two different ways on the signs of banks in town. TIRUKKALIKUNDRAM and THIRUKKALUKUNDRAM.

Mahabalipuram
January 10, 1987

Going back to roller area this morning. Arrive 6:05 a.m. Starting to get lighted 6:14 Single White-throat flies in. Lands on wire. Sits. Utters series "Chak"s. Sits changes perch several times. Always silent

First roller shows up on wire 6:25. Arrived silently. Sits starts to utter single "Kuk"s or "Kuuk"s at very regular intervals. Lots of D-V tail movs. These are not particularly synchronized with notes. At intervals utters chatter. Chatters always accompanied by some degree of stretching upward (BU or semi-St). Not very extreme. Then single notes resume

There is another roller on wire across road. Presumably mate. ♀? Usually just sits quietly. Only occasionally utters single "Kuk" or "Kuuk", in apparent reply to its partner.

Coracii; Jan. 14, 1987, II

289 (14)

This sequence of "Kuk"s interspersed with occasional Chatters seems to be typical of first wks in morning.

Eventually, the least demonstrative bird flies across road to land on same wire as its partner. But far away. No display or voc. Both birds sit. Make short flights nearer to one another. But still several hundred m. apart. Both birds sitting quietly. Pay no attention to White throat singing (R's) a thousand m. away.

One bird makes pounce. Catches insect. Back to wire. Lands 2 ft from partner. The latter utters Chatter, with upward stretch, as Greeting. Then both relax.

Everything very calm and quiet 6:50. Presumably because other pair is absent.

White throat flies straight toward one roller. Silent. Apparently not aggressive. Roller nodding does silent Wing spread. White-throat swerves and flies away silently.

One roller pounces. Back to wire but far away. Partner flies closer, but not very close. No Greeting.

Rollers quite ignore drongos.

Another nodding pounce. This time returning bird lands very close to its partner. But again no Greeting. Then one pounces again. Arriving partner utters Chatter with little or no stretch.

7:01. Third roller appears. Coming high from far away. Does repeated regular four-sweep (descent) movements. Rather shallow (6-10 ft) Both at set wings (I suppose that there was something like a wing beat on the transition from descent to rise, but it was very inconspicuous.) Whole performance accompanied by regular "Kreaaar" Notes. Quite long but not screaming. Newcomer lands only 1 ft or so from one member of pair. Not much response. Approached member of pair just turns to look. The other member of pair utters 1 Chatter. Then all 3 birds sit silently.

Coracii, Jan. 10, 1987, III. 290 (15)

After a few mins., approached bird flies off toward mate. Utters a few "Kaar" notes in flight. Lands 1½ ft from mate. No greeting. Every body sits. Eventually, third bird flies back in direction from which it came. Silent. Out of sight but probably not far away. Evening next few minutes, one member of pair utters several chatters. With stretches. Then relaxes.

Everything quiet 7:16.

Are the members of the two local pairs becoming used to one another?

One of the pair of rollers begins to utter monosyllabic notes, "Kuk"s and "Karr"s, with occasional chatters (with stretches). O thinks that a third Roller answers in distance. Certainly the roller alternates "Karrs" with crow for a minute or more. Then everyone falls silent.

There is an increase of tail movements with vocs. Some V-D as well as DV. Tempo is irregular.

7:31. By big irrigation ditch. Twice see Whitethroat supplant Attis! Whitethroat silent. Attis probably utters a few "Tuct"s. Flies away. Lands in low bush. Head bobs. Flies away further.

Leaving 7:45. Rollers feeding. Display seems to be over.

Going into Madras after lunch, O sees 2 dead rollers along side of road. Accidents can happen here, but they don't seem to be very common.

Bhubaneswar,
January 12, 1987

Arrived here last night. I am going down to hotel grounds this morning starting out 5:55 a.m. Still rather cloudy (it rained last night) Also cool.

Lots of crow-sounds. Not much else.

Usual assortment of mynahs, drongos, bites, etc. Also other starlings and tree pies

Coracii, Jan. 12, 1987, I.

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To Coracii. Stopping 7:00 a.m.

We do various things in town later in the day. Catch one brief glimpse of an Ind. Roller, and one brief glimpse of a White-throat. That's all

Bhubaneswar,
January 13, 1987

Going to work along road to Puri (Juggernaut Temple) this morning. Start 5:45. Morning is foggy.

5:59. Just outside suburbs, region of rice and marsh, large trees by road. Hear Whitethroats. Both R's and "Chak"s.

Further on, 6:15, single Whitethroat on wire. Does several single V-D Headbobs watching me. Signs of nervousness.

NOTE: Common local Tree-pie utters series of notes very like the "Chak"s of Whitethroat.

6:30. Group of Kingfishers. 3-4 Pieds and 1 White-throat. All on wires. Whitethroat is only a few inches from two of the Pied. All very calm and relaxed, looking down at small pool. Finally Pieds fly off. Whitethroat pays no attention. Certainly there was no interspecific hostility or even avoidance.

More and more Whitethroats on wires along road. Species is extremely abundant here. Environment is not unlike some areas near Mahabalipuram - Kuzhi - Irizi, but more small streams and ponds.

One Whitethroat does several WF's immediately after landing on wire. Classic "flight int. mvmt"

6:44. Local Whitethroats are being generally quiet now. Probably not in breeding condition. Although spatial arrangements suggest that pair bonds are being maintained

Single Pied hovering with "Tsee" Notes

7:05 Single Whitethroat on ground. Actually on asphalt of road. Standing erect. Or almost hits brim. Flies off. Many Bee-R's and "Cuckoo"s in neighborhood.

7:33 Whitethroats becoming less conspicuous now. Still some R's in distance.

7:52 Pair of bee-eaters in bush above water hyacinth. May be Blue-tailed. Just sitting quietly.

8:00 Catch glimpse of dispute between two Whitethroats. Sweeping attack. By the time that we get out of car and focus, the opponents have separated. Standing alert 20 ft apart. One does brief semi-ft (BU) on landing after changing perch.

8:30 At Puri itself. Huge long sand beach. No trace of mangrove. Whole front is heavily built up.

NOTE. Perhaps one point should be made clear. The local Whitethroats are often perched over water (it would be difficult to perch anywhere else in this region!) We have not, however, actually seen them fishing (or even feeding in any other way). Still, it is difficult to believe that the Whitethroats can avoid such an abundant as fish must be.

10:01 Just after leaving Puri on way back. Wires over rice field. See single bee-eater. Apparently philippinus. Silent and alone. 0 photos. (As) remember, this is one of the less gregarious species) Changes perch from time to time. At one point, passes close to single Ind. Roller. No interaction. Bee-eater flies off. Roller remains. Then utters a few chatters. 0 photos and records. Then roller flies away silently.

Single Pied perched on stump by pond ♀. Says that she has seen at least 2 other single Pieds.

11:07 Single roller on wire over rice

Stop 12:00 m

Bhubaneswar,
January 14, 1987

Going to Chandbali and crocodile reserve this morning. Following road to Cuttack and Calcutta. Start 6:20 a.m.

At first we go through very low country with lots of water, pools, streams, paddies, etc. Again White-throats are superabundant.

Countryside changes after Cuttack. Still very flat, but obviously slightly higher altitude. White throats slightly less abundant. Some Ind Rollers around.

Nothing very different on rest of trip

Finally reach Chandbali ca 12:25 p.m. Talk to District Forest Officer. The reserve (sanctuary) that we are going to is called Bhitar (or Bhittar) Kanika. The island on which we will stay is called Dangamal. According to the forest officer, the Brown-winged Storkbill & Halcyon or Pelargopsis amauroptera (?)) is conspicuous. So is Black-capped Kingfisher, Halcyon pileata (presumably on migration). The Blue-winged Storkbill is supposed to be absent: Oriental is supposed to be rare.

We get stuck in Forest Inspection Lodge, near beach in town In interesting coraciiform sounds during afternoon I finally go out for small walk ca 5:00 p.m.

Nothing at all until almost dark. Then, 5:45, hear burst of White-throat "Chak" notes in distance. NOCA. Even later, 5:59, hear another series of similar notes. This species seems to be comparatively crepuscular, at least in the evening and as far as "Chak" notes are concerned. Why? (NOTE: it is full moon now.

Chandbali,
January 15, 1987

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Not much D.C. Mostly shorebirds and owls Lots of fog.

Loading boat for trip to sanctuary. Suddenly see single Attiss perched on gangway, only 3 ft away. Silent and alone. Does one V-D Headbob with sim ultaneous V=D Tailbob. Then single Head-bob alone. 0 photos, Bird flies off silently. (NOTE: this habitat is tidal river bank). Tide is low.

ADDITION. Something I forgot to mention the day before yesterday. According to V.N. Dev, Brown winged Storkbills feed on small mudskippers. Flies down to mud at low tide and extracts the animals from their burrows.

Finally start down river 6:55. River name is Baitarani. Banks are mudflats and Saltings

Entering creek 8:32 See single Blackcap 4 ft up in brush almost immediately. Flies along in front of brush. Then disappears. A little further on, see single White throat in similar environment. Still further on, see another single Blackcap. Plunges into water. Back to low perch. No prey visible. Does several V-D TB's, no HB's, as boat passes.

NOTE: Salim Ali says that Blackcap breeds in India

Further on, see single Attiss.

Go on to broader creek lined with mangrove. No Kingfishers. Water is very opaque here.

Arrive rest house 9:37

Single Blackcap flying from bush to bush in semi-pasture. Apparently silent.

I go for walk. Sort of "plateau" area (in Senegalese sense), bandy scrub area. Rows of coco palms. Casuarinas, etc.

10:10 See single Little Green Bee-eater feeding low from barbed wire scrub. Utters trill & trills in flight. Couplets. "Dee dee dee". Lots of vertical tail movements while perched. Approximately equal emphasis on V and D. Then second Little Green shows up. Feeds closely. No signs of aggression.

Coracii, Jan. 15, 1987, III

Stop 11:00 a.m. Then start out again, this time in direction of creek 11:40 Nothing of interest.

Mohapatra went for a separate walk toward crocodile farm. Sees 2 single Black-caps. One was "calling".

Starting out again 3:00 p.m. In dinghy. Along creek. Sun is out but wind is cool. All birds generally quiet.

Long series of accelerated "Chak" Notes. Morning Kingfisher. Did not sound quite typical of Whitethroat. K.K.M. thinks he saw Blackcap.

3:23 Single Blackcap perched 5 ft up on dead stump in water. Changes perch at least 3 times, plunges to mud once, (feeding?). Silent throughout.

Further on, see single Attis

Further on, K.K.M. sees another single Blackcap low in mangrove edge water. Silent

3:50 Still another single Blackcap in mangrove. Flies from tree to tree in front of dinghy. At least 20 short flights. Over length of at least 1000 m. Silent throughout. Territories of indiv. of the species must be long. Perhaps thin strips of mangrove.

It is interesting that there are no Picids on this creek. Water must be too opaque for hovering technique. Attis may flourish because it feeds on shallows Blackcap and, presumably, Brown-winged Stork-bill may feed primarily on mud banks out of water.

Everything is very dull now. Turning around 4:37 p.m.

Single Blackcap low in mangrove. Just looks at us. Only one slight V-D HB. These birds do not seem to be Bobbing frequently. Flies away across stream. Silent (as usual).

Single Attis perched very low in mangrove. Makes short fishing flight into shallows. Flies away.

Single Blackcap. Usual habitat. Flies away silently

This ind. lands 30 ft away. Pays no attention to Rhesus monkeys only a few ft/yds away.

More glimpses of single Blackcaps. Again silent

Light beginning to fade, 5:17 p.m.

A few minutes later, ca. 5:35 p.m., approaching dock, sudden burst of avian "chak" type notes by one ind. Series is irregular, not too long. Ending with 2 "Triplets."

A few seconds later, there is a burst of R's by 4-5 inds. In mangrove. All tens or hundreds of m. apart from one another. R's do not sound like typical Whitethroats. Perhaps were tiring in tone. Certainly starting relatively slow and then accelerating. The different inds. did not overlap one another. The physical sound of these vocs was reminiscent of Turdoides babblers, but there definitely was no group involved. So I rather think that these R's may have been uttered by Blackcaps.

In any case, a sort of "evening chorus." (Much more definite and conspicuous than anything I remember by Whitethroats in comparable circumstances.)

If these speculations are correct, then the vocal repertoire of the Blackcaps, in form if not in frequency, very reminiscent of the Whitethroat

3

Bitar Kanikal
January 16, 1987

Starting early. Going to river mouth & creek. Area is called:
PARAMANANDA KHOLA. Boat leaves 5:30 a.m. Clear. Almost full moon. Tide is very low.

6:05. Getting light, approaching entrance to small creek where we will moor. Hear burst of "chak" notes. Sound like Whitethroat

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A few minutes later, flush single Blackcap. Flies away silently. Then see another. Perched on rice pile in pasture!

Then flush two Pieds. Fly away with bright alarm notes. (Note: water is still fairly opaque here.)

Reach mobbing site 6:18. Single Blackcap perched on pole. Flies away silently, as usual.

Go for walk along shore. See single Attis. 0 tries to record. May get some "Sweet"s as bird flies away.

Single Whitethroat on pile of rice in pasture.

Obviously the local Blackcaps are not singing frequently here now.

Start out downstream in dinghy 6:37. Very quiet.

See single Attis

6:56. Come across single Brownwinged Storkbill. Flies from perch to perch in front of dinghy. Once makes shallow plunge, a ft from bank, apparently fishing. Also silent throughout flight after flight after flight. Covers length of at least several thousand m. NOTE: there are no Blackcaps here. Coincidence?

Storkbill finally turns around and flies upstream again.

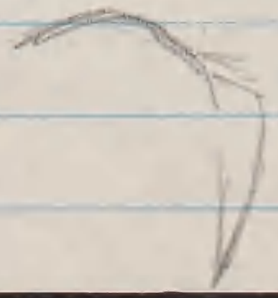
Some minutes later on, see another single Attis. Then still another. Species is very abundant here.

Blackcaps simply not detectable now. Why??? Conditions should be favorable. Tide is still going out.

NOTE: Full moon was January 14th.

One more single Attis. Headbobs and flies away silently.

7:30. Come across another Brownwing. Also flies from perch to perch in front of dinghy. Also quite silent. Ophotes. Once perched looking at water. HD with head quite low



see Blackcap

sits. Then flies

Suddenly, Brownwing turns back, and we perched in mangrove, 20 ft up, 10 ft ahead. Blackcap further into mangrove out of sight. Utters short

series of "Chak" Notes in flight. Definite O records. As far as I can tell, these notes were indistinguishable from those of the White-throat.

A few minutes later, come across another single Blackcap. Flies in front of bridge. At first silent as usual. Then begins to utter "Chak" Notes. Again White-throat-like. Several notes while perched, then continue as bird flies off. O records. Very clear.

Another single Blackcap, 200-300 m. on, remains silent

8:00 a.m. Turn into larger creek. Weather hot and still. Birds quiet. Hear Cruiser "Chak" Notes in distance.

Further on, single Brownwing flies across creek silently

Going in low - 8:17. See single Blackcap and single Brownwing in different areas. Tide is coming in now.

Get to new creek. See Blackcap. Utters "Chak" Notes. Can't record because of sound of boat motor

Still another single Blackcap. Silent. And yet another. Does slight U-D HB's as we pass close. 9:03.

Shore Albatis

Storkbill flies across creek. Silent and alone.

Still another single Storkbill.

Another single Blackcap. Flies to new perch. Does quite extreme U-D TB with drug WF on landing. Then does several more HB's. Some, not all, of the HB's are accompanied by TB's. All are U-D. All quite silent.

NOTE: This species seems to perform int. movs. comparatively frequently. Is this causally related to infrequency of vocalizations???

9:21. Single Blackcap. Looks at us. Does many HB's, a few TB's. These are not synchronized this time. Bird finally flies away silently.

Blackcap flies across creek. Silently.

Still another single Blackcap reacts to our approach by doing HB's

without TB's (or WF's).

One Blackcap lands on mud flats. Flies off.

Ending observations 10:00 a.m. Going back to lodge in big boat. See Blackcaps on way. [NOTE: Brown-winged Storkbills are less abundant than Blackcaps. Possibly they also retire to "rest" earlier in the morning. Vis our observations — or the lack thereof — yesterday.

Perhaps the activity rhythms of the local kingfishers are partly (or largely) controlled by the tidal flows in addition to the day-night cycle.

Back to dock 10:30. See single Blackcap & Jt in young casuarina in pasture. Same place as yesterday. Flies off & dives. This area is only 100 m. or so from nearest mangrove, but it is very different in structure.

NOTE: The Brown-winged Storkbill is really bright-colored. Blue rump and tail are brilliant. Wings are a dull dark brown. Head and underparts are bright ochraceous yellow. Bill is salmon colored. (There seems to be no trace of the dark cap of the Blue-winged Storkbill.)

NOTE: On the little evidence available to us, the Whitethroat and the Blackcap would seem to be closely related to one another. Yet I vaguely (correctly?) remember that Ivy lumped the Black-capped to the Grayhead. Are these two views incompatible with one another?

Local reports would suggest that there may be as many of 3 Blackcaps in "plateau scrub" near rest house. I will go out for a short walk at 1:45 p.m. Sunny, windy, fairly warm. All birds fairly quiet. Nothing of interest.

Going out in dinghy this afternoon 3:10 p.m. In opposite direction from yesterday afternoon.

See 2 single Blackcaps in first 15 mins. Both fly away silently.

Another single Blackcap flies away silently across creek. Comment: The creek is fairly broad here, ca. 125-150 m. We have seen Blackcaps cross such broad channels before. I.E. mids have territories on both sides. This is obvious

for the birds of narrow creeks, who will zig zag from side to side when retreating before Dinghy.

Turning into slightly smaller creek 3:50

Tide is going down now, but it is far from extreme Low.

3:55. See single Brownwing. 4-5 ft up. Over water. Looking down Obviously looking for food. This is more or less conventional Bill-down (slightly diagonal). Head itself is not lowered. Bird sits very still. No trace of Bobbing of any sort. Then, when dinghy gets very close, the bird suddenly does 2 extreme V-D Tail Bobs. Flies away silently.

Throughout our period of observation, the Brownwinged ignored a single Althis perched a few feet away. And the Althis ignored the Storkbill.

When the Brownwinged flew, it went about 20 ft along the shore. Then it turned "inland." At same time, we see a single Blackcap perched 20 ft ahead. Was the Storkbill avoiding the Blackcap? Are Blackcaps dominant over Brown-winged Storkbills???

Turn around 4:15.

See Blackcap. Flies silently across creek. Some 20 ft further on, see Brownwinged and Althis at same place as before. Brownwinged flies silently in front of us. 2. E. away from Blackcap territory.

We have yet to see Blackcap and Brownwinged territories actually overlapping although they certainly are adjacent.

I think that we saw at least one Brownwinged crossing a large creek this morning.

More single Althis.

Single Blackcap makes shallow plunge into water 3 ft from shore.

Flies still another single Blackcap.

We get back to dock at 5:15 p.m. A few minutes later we hear R's and Trills as yesterday evening. 2 records. Then one of the locals tells us that the

Coracii, Jan. 16, 1984, VI.

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woodpeckers is a woodpecker!

The fact that both Blackcaps and Brownwinged Storkbills are quiet cannot be coincidental. Again one thinks of a "stop effect"

Bitar Karaka
January 17, 1984

Going back to place visited yesterday morning. Launch starts 5:30 a.m. Still dark. Tide is going down

6:10 See single Brownwing perched 2½-3 ft up edge water. As usual, "looking down", bill inclined diagonally downward. (Blackcaps seem to adopt this posture less frequently, or maintain it less consistently, than do the storkbills)

Arrive site and get into dinghy 6:25.

Certainly no sounds of kingfisher "Songs" 6:50

7:10. See Attilus. Plunges into shallow water. See single Brownwinged flying ahead of us. Silent. Disappears. Apparently gone into mangrove further from creek No! It is still flying ahead. See it perched, bill down as usual. Flies off with rather long irregular series of "Clark" Notes. Sounds very much like Blackcap and Whitethroat. Bird has gone quite far along creek. Back and forth from side to side. Finally arrives at perch about 6 ft from Blackcap. And the Blackcap flies 6-10 ft further away. This is first example of retreat by Blackcap before Brownwing that we have seen!!!

Then situation becomes more complicated. I am not sure that I get all the details; but the main outline is clear. The Storkbill flies diagonally past Blackcap to other bank. Probably passing at 5 ft distance. No immediate reaction. But Blackcap starts to vocalize about 5 seconds later. "Clark" Notes. First few notes probably given while bird is still sitting. But then it launches into flight. Sort of irregular circular and/or figure of 8 course. 20-25 ft up

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above surface of water (ten above bushes). Continuous creating swings. And lots more "Chak" Notes. Sometimes showing a tendency to break up into doublets and/or Triplets. The whole performance looks almost like a low intensity (and therefore irregular) version of Flight Display. Then the Black cap flies off into interior of mangrove. Perch 20 ft away. Utters more "Chak"s at irregular intervals. The Brownwinged just sits. Then flies away silently, back in the direction from which it came.

This whole encounter must have been a territorial dispute. Doubtless provoked by our approach — the Brownwinged dared to trespass upon Blackcap territory by its efforts to keep away from us.

Just to be clear... The Brownwinged uttered one/some series of notes during the whole incident. The Blackcap was much more vocal

I recorded most of the Brownwinged series (except the very beginning) and a lot of the Blackcapped sounds.

I and J.J.M. think that the "Chak"s of the Brownwinged are different from those of the Blackcap. This is true - up to a point. The "Chaks" uttered by the Brownwinged this morning were particularly loud and harsh. The "Chak"s uttered by the Blackcap this morning often were "thinner" But there seemed to me to be considerable overlap (i.e. some Blackcap notes also were loud and harsh).

After this, we transfer to launch and head back to Chandbali.

8:10 Still in narrow creek. Near site where Brownwinged-Blackcap incident occurred earlier. One Blackcap flies ahead of boat. Lands on perch. Another Blackcap appears only 1-2 ft away on same branch. Both fly away as launch continues to advance. Then we see two Blackcaps on same branch further ahead. This may be indication of pair bonds (the first that we have seen). Again, the Blackcaps fly away. Disappear. Gone back past launch?

Then we see single Brownwinged perched some m. further on. Flies away silently. This may have been another "forced" encounter between the 2 species

Corrientes, Jan. 17, 1987, III

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COMMENT: Actually it would appear that individual Blackcaps and Brown-wings are treating one another as conspecifics here. To all intents and purposes, they are mutually exclusive. Peculiar!

As we go further up narrow creek, we see more herons & others. More than we saw earlier this morning going down the creek. Sun is higher now. Perhaps the birds were waiting to warm up?

Bhubaneshwar,
Jan. 18, 1987

Going to Konark Temple in mid-morning. Start 9:30 a.m.
Although it is late, there still are lots of birds on wires. White-throats. Lots of Drongos. At least 2 "groups" 8-12 birds quite close together. Not, however, very close to highway. What are these birds doing? Preparing to migrate???
One pair of Reds. One ♂ and one ♀.
Arrive Konark itself 11:28 Stay for a couple of hours, and then drive back
Nothing seen of relevance

ADDITION: I forgot to mention that yesterday, as we drove back from Chandbali in early afternoon, we saw lots of birds on wires throughout trip. White-throats in usual places; Ind Rollers (frequently perched above stubble fields); and Drongos (singles and pairs)

(29)

January 19, 1977
Kuala Selangor

Came here for Kuala Terengganu this morning. Arrived 11:30 a.m. We did not see many due to diving the trip C.G. a few Bridled Terns, all single, a Brown Booby, a Little Egret, a Cattle Egret, plantations

Crows seen on the drive were the White-throats on wires and in trees over rice fields. Approx. 40 all single. Some Rollers. One with Yellow-Billed

Olive-backed Sunbirds. Approx. Blue-tails (Oil palm groves). Feeding from hibiscus in our Chalet gardens.

January 20, 1977
Kuala Selangor

Going to Lake Chalong side roads, main track thro' oil palm plantations. Heavy rain during late morning "late" (we never left edge of Lake again)

Bird-song is dominated by Bulbuls. Crows-6:20 as Light. Heard Little Egret sounds like White-throat Rattle 6:25 a.m.

Olive-backed Sunbirds. Also sounds both before and after. Rattle-long duets. One end sutter long series of hard Cicada-like notes. The other utters many types of Bubbly, musical trilling sounds. Shelter points in Oil palm plantations. Can't see the performers.

"Brown Flycatcher" on a bush in early morning.

NOTE. At least some birds are breeding now. The saw-wielding (or long spoon) in Oil palm at Lake early morning.

Heard Red-vented Bulbul 6:53 (just getting full light now).

7:15. Finally down by mangrove by canal. First see single Blackcap (H. pileata). Lands silently on branch. Head-bobs. Then see single H. chloris ("chlor") perched silently on dead tree 100-150 ft away.

Then see single Altitis perched on low pole very edge canal 100-150 ft from Chlor. Also silent.

Chlor is flaring <u>into</u> mangrove, looking from side to side. <u>Not</u> peering at canal.

7:31. See Chlor flying from tree to tree, calls up, <u>inside</u> mangrove. But I thought that I (also) saw Blackcap flying same area a few seconds earlier. Territorial encounter???

Then we hear Rattle nearby. Sounds like White-throat but thinner and higher.

NOTE: This whole area looks tidal, but, if so, the tide is out now.

7:50. Single Kingfisher flies across canal. Utters irregular series loud "Kaa kaa kaa..." Notes. I think that this is Blackcap. But then we see single Chlor perched alone up in mangrove near spot from which the other bird flew. Chlor is just sitting quietly now.

Single Blue-tailed Bee-eater lands top dead tree. Flies off again.

7:58. Hear White-throat Rattles from Rest House hill across canal. I.E. there are 3 species of Halcyon within earshot of one another here.

White-throat utters Rattle after Rattle.

See single Blackcap perched dead tree in semi-mangrove area at bottom of hill. This is not the bird uttering Rattles now. Blackcap flies away into dist. area. Probably (?) with "Kaa" Notes.

Observe watching pair of Chlors. One perched 4 ft up in mangrove. The other 6 ft up. Only 1 m. apart. Both just sitting very quietly, looking at ground.

8:21 a.m.

Very hot and still 8:30. Everything very quiet

8:51. See single Black-cap perched 10-15 ft up in dead tree edge mangrove. Does HB, flies off. Then see another Kingfisher 200 m. away, perched 20 ft up in another dead tree across canal. Almost certainly another Black-cap.

Stopping observation 9:00 am

NOTE: The Black-cap is only a non-breeding migrant in Malaya. Here at the moment, however, the Black-cap may be more of a mangrove edge inhabitant, on the average, than the Chlor. The Chlor may move into the mangrove more frequently. But this difference needs to be confirmed.

11:00 a.m. D sees apparent pair Chlors on top of hill by Rest House. One on Frangipani. One on adjacent large tree.

In afternoon, go along road to Perjantai. Hear White-throat type Rattles from oil palm plantations ca. 4:00 pm.

5:10. On road back from Perjantai to Selangor. See single Dollarbird perched 20 ft up bare tree over rather rich mixed scrub between clearstream and Selangor River. Silent. Pouring.

There are some Blue-tails in mangle trees. Hear a sparrow-quiver one another

Further on, see single White-throat perched in tree in cleared field. Another White-throat lands with "Chak" "Trills" in tree 200 ft away. Sets

NOTE: This area is very near stop of high forest along edge river. Here D sees 2 White-throats and more or less together. Some Wagtails.

Going back to road, see second Dollarbird perched bare tree 150 ft from forest. Makes fly-catching flight out of sight. Then ~~just land~~ flies far away. With single Rasp ??? Just land remains sitting as before. Then flies off, silently, in same direction as second.

Stop observations

January 21, 1979
Paula Zelenger

Going to work along same mangrove canal as yesterday morning. Starting early. Arrive @ 5:20 a.m. Still quite dark. There is heavy cloud this morning. D.C. has not started yet.

Miscellaneous bird sounds, including some Kookaburra-like howlings by 6:30 a.m. Also some "Kaa kaa..." like notes. Then general lull.

Almost full light @ 6:45. But still no definite (audible) sign of Kingfishers.

6:50. Hear Kingfisher-like sounds from inside mangrove. Several series 4 notes. "Kuk Kaa kaa kaa" - first note an intro, softer than the others. The last 3 notes loud and "clanging", not particularly harsh. Then a long irregular series of "Kaa" Notes. Chlor disputa ???

7:00 More loud irregular series "Kaa" Notes in mangrove.

Sun out 7:15. Everything very quiet. Tide very low.

7:46 More irregular series of "Kaa" Notes in mangrove. Sometimes declining to doublets. "Kaa kuk kaa kuk kaa kuk...." — — —

7:53 Finally see single Blackcap perched 3 ft up on pole in centre bank. No vegetation nearby. Closest mangrove is 8 ft away. Bird just sits. Then flies off into mangrove. Probably silent.

Then see Alcedo up perched on pole in water.

Then see Blackcap (again). Perched 15 ft up in dead tree over mangrove. Again flies off silently.

Further on, see single Blackcap perched on pole in canal itself. Looking from side to side. Flies off silently to mangrove on far side.

8:50 Inside mangrove on boardwalk. See single Chlor perched 6 ft up

to small branch edge semi-clearing. Obviously nervous of me. Alert postures. Also flies from perch to perch. But no HB's, WF's, or TF's. Then disappears silently. Again by short flights from branch to branch. Heard once, back a few runs. Enters. Perches & Sits up. Then flits from branch to branch. Off again. Quite silent throughout.

Stop observations 9:25 a.m.

Back to area where Dollarbirds seen yesterday 1.30 p.m. Some Blue-tailed Bee eaters around. All apparently "single". This seems to be characteristic of the species here now.

2 Blue tails flush from bank. Fly off with wooden "chuk" notes.

Single White-throat on partly canal.

2:00 p.m. Just inside high river edge forest. See single Blackcap at least 35 ft up. Flies off to another branch. Silent.

Later on, see another Blackcap fly into old rubber plantation, then over to fairly high secondgrowth scrub.

Still later, see a single White-throat fly from bridge into oil palm plantation.

COMMENT: Blackcap outwards does appear to range farther away from mangrove than does Alder. In this region, Blackcap may lie between Alder and White-throat (and overlap both). The Blackcap and White-throat may also prefer different kinds of plantations. Rubber for the former. Oil palms for the latter.

Back to mixed-mangrove-casuarina area 4:35 p.m. Water fairly high.

Single Dollarbird perched in dead tree where Blackcap seen yesterday. In fact, a Blackcap is there now, 10 ft below Dollar. Both just sitting quietly. Dollar flies off. Blackcap pays no attention.

NOTE: Silver Leaf Monkeys are drinking from canal & E. water cannot be very salty here.

5:20 Near area of mixed. Single Alder perched on log over water 20 ft from

mangrove patch of mangrove. Just sitting quietly. Again no HB's, WF's, or TF's. Flies away, silently, without prelim. HB. Flies across creek to another log. BW's. Sits. Then HB's twice when sandpiper passes by. Sits. BW's. Chill is covered with mud. Sits again.

6:10 pm. Walking back. See single Blackcap perched 30 ft up dead tree edge mangrove. Flies away silently when Hookbilled Crow-Lark's in same tree. Flies to top tree 30 ft away. Does 10 V-D TF's after landing. Some are very extreme. Then just sits.

January 22, 1977
Linda Belanger

Going to Tin Island-canal-mangrove area again. It rained last night but morning is clear.

Hear Hornbill-like sounds and White-throat Rattles on hill as I leave.

Arrive mangrove @ 6:30 a.m. D.C.'s in swing and it is getting light. No King fishers visible. I will go straight to boardwalk.

Nothing audible at moment.

Several different birds in distance utter indeterminate series of "Kuk kuk kuk kuk kuk kuk kuk kuk kuk kuk....." Notes. Slower than Rattles. Series repeated, rises and falling in pitch. I also heard these yesterday.

Several counts "Kaa" Notes @ 6:40 a.m. Also some Doubles.

General lull 6:50.

Pair Bornbirds. Notes copulating.

More series "Kaa" Notes near mangrove 7:10.

Then I see single Blackcap perched 25 ft up in dead tree across canal. Silent. Same tree in which it perched yesterday afternoon. Then Blackcap flies away.

7:18. Walking along bund. Suddenly single Bmg Jerkin bursts out low from mangrove right in front of me. Flies across canal. Utters is approx. 5-7 "Kaa" Notes, followed immediately by 2-3 "Kaa-Kuk" Doublets, in flight. Lands 25 ft up in dead tree far side of canal. This appears to be exact same tree in which Black cap was perched a few minutes earlier. But the bird there now is Chlor (definite). Sits silently. Looking around from time to time. Occasionally yawns (gapes). I have seen yawning by this species before. It could be ritualized. As usual, the bird does not do any HB's, WF's, or TF's, while sitting quietly.

The bird also ignores loud outburst of "Kaa" Notes and Doublets in distance. Then, a minute or so later, when all appears to be quiet, it suddenly begins to display. Utters 6-7 typical "Kaa-Kuk" Doublets (no preliminary series "Kaa" Notes alone). Each Doublet accompanied by one extreme (not very rapid) V-D TF. Obviously very highly ritualized indeed. Then the bird sits quietly again.

Was this territorial advertisement???

Bird finally flies back across canal to mangrove. Silent in flight. A few minutes later, I see single Chlor, presumably same ind., perched quietly on branch aft up edge mangrove looking down at ground. Presumably "hunting."

7:49. Hear loud and long series "Kaa" Notes, without doublets, in distance. I will move on in that direction.

Hear long series Chlor doublets, without monosyllabic "Kaa"s in distance. But unfortunately can't see performer. It sounds as if it were several hundred feet from where "Kaa"s were heard earlier.

These Chlors seem to be fairly active today! Effect of rain?

7:57. Single Chlor (not the individual watched earlier) perched 25 ft up in dead tree over mangrove across canal, suddenly utters 4-5 "Kaa" Notes, followed immediately by several Doublets, without TF's. Then just sits. Then

BW's. Them sits again.

Are Doublets lower intensity than series "Kaa" Notes?

Chlor on dead tree is still sitting 8:06. Yawns. Ignores several series of (5-8) "Kaa" Notes from this side of canal. Also "Kaa"-Doublet performances

Apparently, Doublets always follow monosyllabic "Kaa"s whenever the 2 occur together in same series.

8:08 a.m. Bud on dead tree utters several more series of "Kaa"s. All series fairly short, 3-5 notes. Quadruplets most numerous

It is answered by bird on this side canal. Monosyllabic-Doublet series (9 thinks). Complete overlap. Then bird this side of canal flies over to join bird in dead tree. Utters 3-5 "Kaa"s before landing. Bud in tree also utters short series of "Kaa"s as newcomer approaches. Newcomer lands silently, 1 ft from the other bird. Now I can see that newcomer is much smaller than the other. Newcomer presumably ♀. The other presumably ♂. The 2 birds presumably a mated pair. ♀ stands in alert posture after landing. Silent. Does one slight V-D TF. ♂ continues to utter short series of "Kaa" notes, usually Quadruplets, at short intervals. Sort of leaning toward ♀ in oblique-upright alert posture. Mandibles OCB with notes. No trace of TF's at any time. (Or HB's or WF's for that matter).

Then ♂ flies off to another dead tree 20 ft away. I think at least one short series of "Kaa"s in flight. Lands silently in alert posture. ♀ follows less than a minute later. Lands silently. Stands in alert posture. Carpal joints held out, but no "rest" Wings spread. ♂ utters a few more short series "Kaa"s. Also BW's several times between vocs.

Then ♂ flies off again (with short series "Kaa" Notes?). ♀ follows, silently, immediately. Both birds disappear from view.

Apparently back again a few mins. later. One bird (♂) in dead tree across canal. Utters more short series "Kaa" Notes. Again no TF's. It is answer

ed (again) from this side of canal. By Monozygotic - Doublet series. And series apparently consisting of Doublets alone. I assume that this answering bird is the ♀.

Are Doublets primarily or exclusively a ♀ pattern??? I doubt it.

Then there is some confusion. Chlor in dead tree flies over in direction of presumed ♀. Then somehow a 3rd bird, a Blackcap becomes involved. I think that it flew from some previous perch (where it may well have been sitting for some time unobserved by me) when it saw Chlor approaching. In any case, when the birds sort themselves out, the Blackcap is sitting high in tree, the 2 Chlors are sitting inches apart from one another, on low (1 - 1½ ft) pilings in water, 100+ ft from Blackcap. All birds silent.

Blackcap flies silently to another tree. Does one slight U-D TF after landing. Eventually disappears from my view.

While I am watching the Chlors feed. From their perches on the low pilings.

NOTE: These pilings are in a creek or tributary of the main (Selangor) river. Not in canal. This creek certainly is tidal, and the tide is coming up now. Water fairly muddy. The 2 birds usually fish from pilings several ft. apart. By shallow tangential dives. Not very spectacular or specialized in appearance, but obviously efficient enough. Some or all dives successful. Catching very small fishes. After a dive, the bird perches on a piling. No battering (fishes presumably too small) ♂ once does a head shake (and general shake?) immediately after a dive. Both birds (also) preen after dives. Apparently quite relaxed and unmotivated.

One bird, probably the ♂, fishes more actively and dives more frequently than the other. Is it characteristic of Coraciiformes (at least the predatory types) that ♂'s feed more actively and frequently than do ♀'s during the "courtship" or pre-laying phase of the breeding cycle? I think so.

No trace of any attempt to pass food from one individual to another.

I take my eyes off the birds to write notes. Look up to see one Chlor flying up into mangrove near me. Utters "Kaa"s in flight. Continues "Kaa"s, changing to Doublets, after landing on branch & stops. No TF's. This bird is answered by another across river. Monosyllabic "Kaa" → Doublet performance of the usual type at least the last 3-4 Doublets are accompanied by V-D TF's. Is the first bird ♂ and the second bird ♀??? 8:43 a.m.

A few minutes later, a bird (♂??) flies from my side of the canal to join another bird (♀??) in dead tree far side of canal. Flying bird utters series of "Kaa" Notes (followed by Doublets?) in flight. Then lands silently a few ft. from "partner". The latter begins Monosyllabic-Doublet performance as incomer lands. At least the Doublets are accompanied by extreme V-D TF's. I notice that the tail feathers are widely spread during downstroke, but apparently not on upstroke. The whole performance is accompanied by definite, rigid, holding out of the carpal joints. (Is it significant that this species does not have a wing stripe like the White-throat?)

NOTE: It is possible that the V-D TF's began with or during the Monosyllabic "Kaa" Notes during this last performance, but I did not focus on the bird until too late to see the first phase.

Then the 2 birds fly away together. Out of sight behind tall (mangrove?) trees. Then I hear many voices from the area. Long irregular series of harsh notes Sometimes accelerated or even "pumping" Some notes monosyllabic, others bisyllabic "Kwaer"s and "Kwar-arr"s. All jumbled together. This must be copulation or (more probably?) dispute.

Then there is a period of silence while I go back to writing.

A few minutes later, the birds seem to be back. At least there is some calling back and forth, as usual, from both sides of the canal.

NOTE: There probably are more Chlors in the neighborhood than the single pair that I have been trying to follow. In any case, I shall call this pair "A".

I stand up and start to leave 9:10 a.m. This seems to disturb the Chlor in dead tree across canal. It utters typical Monosyllabic-Doublet vocalization. At least some Doublets with U-D TF's I notice that last Doublets are "slowed down" (i.e. uttered at progressively greater intervals)

Also hear more Chlor sounds in mangrove as I walk back along bund.

And see 1 Blackcap fly low into mangrove

NOTE: the mangrove here is peculiar in one respect. I have never seen grow und actually covered by water. Perhaps it is only really flooded at high Spring Tides. But even now the soil is quite wet, especially just below crust. And water level may be only a few inches below surface. Four-eyed fishes (and presumably crabs) have water filled holes and burrows into which they retreat.

COMMENT: It is interesting that the Chlors seem to lack high flight displays. Even though their mangrove habitat is so dense. What does this mean? Are high flight displays characteristic only of species with small territories? (The territories of the local Chlors probably tend to be rather small. The birds appear to be rather evenly paired together.)

ADDITION: I saw a single Dollarbird in bare tree, 20-25 ft up, on hill by rest house this morning while I was in the mangrove

We drive to Batang Berjutai before lunch. See more White-throats on wires by road next to Oil Palm plantations.

Along road to Berjutai again in afternoon 4:20 p.m. Walk around area where there is some rather tall scrub as well as fields, Oil Palms, etc. It is cloudy now. Looks like more rain. Quite a number of miscellaneous bird noises.

See single Dollar perched high in dead tree in field. Some Bluetails in other trees. Then see another Dollar perched in dead tree 100-150 ft from first.

Rain starts 4:37 p.m.

Rain stopping 4:50 p.m. See single Storkbilled Kingfisher (Pelargopsis

capensis). Perched on high wire by road, facing small stream running parall-
el to edge patch of high scrub forest. Then it flies off into forest. Apparently silent
A few minutes later, see (same?) Storksbill perched same place wire.
Bill looks blackish. Juvenile?
Bird sits several minutes. Then plunges straight into small stream. Catches
small fish. Flies back into forest.
We walk along to investigate. See that there is another small stream just inside
forest edge.
Lots of White-throat Rattles from Oil Palm area across road. Then see 2 White-
throats several hundred ft apart in dead trees (more or less where Dollars seen
earlier). Both Rattling quite frequently. One flies to adjacent tree and supplants
glossy Starling. Does Wingspread and BW immediately after landing.
A few minutes later, one of the birds begins Grasshopper. Apparently while
still perched. But then flies away silently. No Flight Display.
COMMENT: The local White-throats seem to behave like the birds at Madra
baliyuram, etc.
NOTE: At least one Dollar is still around in area. But not near the White-
throats. Just sitting quietly as usual
5:46. Walk on down to canal by sluice gate. See single Black cap perched
1½ ft up on stump in grassy canal edge. Makes 2 plunges, apparently into water,
apparently successful. Small fishes? Much shaking. 1 V-DTF after second plunge.
Then flies to edge forest. Perches 3 ft up. Does HB. Then several HB's combined
with simultaneous V-DTF's. "Hiccough" s. Then several more HB's alone. Then
flies deeper into forest.
This species does seem White-throat-like!
Stopping observations 6:00 p.m.
QUESTION: Why are some tropical kingfishers nomadic or migratory?
Is it only some terrestrial or semi-terrestrial forms?

January 23, 1979
Kuala Selangor

Back to mud-canal-mangrove area.

Arrive 6:25. Still quite dark. Chlors near car utters several short series "Kaa" Notes. 5-7 Notes per series

Some minutes later, hear series Doublets, series Mono-Doublets, inside mangrove down canal 6:28 a.m.

Chlors are early risers!

More short series of Monosyllabic notes, and Mono-Doublet series, on both sides of canal as we walk down to A area. Most Mono series 4-5 Notes.

Full in Chlor sounds 6:38, more or less as it becomes fully light

Fast rapid fluctuating "Kuk kuk kuk . . . " series 6:40.

Is this vocalization uttered by a woodpecker?

Tide is low now.

See single Chlors on stumps in creek where Chlors fed yesterday, Sitting quietly.

I think that all the Chlors must be feeding in mangrove now 6:50.

Single Chlor flies across canal in distance. Utters Mono-Doublet series in flight. Disappears low into mangrove.

Then there is a long long series of many Mono Notes followed by many Doublets (gradually slowing down) by perched bird in creek.

Unfortunately, there is a Chlor perched nearby and a Blackcap perched several hundred ft away. I thought that it was the Blackcap that was vocalizing, but the sound seemed to be purely Chlor-like. If it was the Blackcap, the sounds were not accompanied by TF's.

Blackcap flies off. Back again a few minutes later. Chlor has dis

appeared in the meantime. Then Blackcap disappears. Chlor comes back. Is this coincidence???

7:10 Single Chlor on post in creek (described as A) flies to mud bank, apparently catches something, flies back to post. Shakes head several times. Sits.

Where is the mate of this bird today?

Speak of the devil! Mate arrives with fish in bill. Lands right by Chlor. Little display. Just bird surely BW's fatter & more obvious. Then flies away to post in ft away. Incomer swallows fish. Both birds sit.

Bird on post flies to mud bank (away from mate). Back. Shakes head. Its mate flies from perch to perch.

All this is quite silent.

A Chlor on post in stream sits rather fluffed with tail slightly raised. Then flies to join mate. Lands 1 ft away. Both birds silent. Standard rather alert posture. Mate does BW. Incomer flops down. Mate utters very short series of notes. Then both birds sit. Gradually relax. Sit for minutes.

Lands with a hop out ↔

There is another pair of Chlors 300-400 ft away in mangroves across creek. One of them utters Phone-Doublet series.

Both A's do one silent WF when sandpipers fly by.

7:28. Blackcap lands in mangrove tree, 15 ft up, about 40 ft from A Chlors. Perhaps the Blackcap utters a Rattle in flight. Chlor flies up. Supplants Blackcap (definite). Chlor utters a few "Kra" notes during supplant. Blackcap flies off silently, without resistance.

Both A's back on different post in creek. One flies off to bank. Back to post. Mate flies to join it. Lands silently a few inches away. Stands alert with wings half spread. Hunched stands with carpal joints out. Then both relax. Just sit. 7:35 a.m.

The A's certainly are less active in display today than yesterday! Presumably they are getting on better today.

One A flies off to bank. Back to mate. Incoming bird apparently utters soft Rattle as it comes in! No (other) Greeting.

One A flies to mud. Actually lands on mud. Perks at ground. Apparently unsuccessfully. Flies back to perch. But mate has moved on to another post.

We see several more cases of feeding from mud (without landing) in next few minutes. At least once, one of the birds gets relatively large crab.

7:43 Both A's start to plunge in water, apparently for fish. From different ports. Then one lands right beside the other on same small post. Incomer does Real (not very extreme) Wing-spread. Also waves wings. Also keeps jabbing diagonally forward. Mate leans back with carpal joints held out. Both quite silent. Actually, I think that this is feeding of one bird by the other. Jabber seems to have small fish in bill. And its mate eventually accepts it.

The bird that gave fish immediately flies to adjacent post. Makes repeated dives into water. Perhaps just bathing? Lots of shaking and preening between dives. Then flies off to tree. Continues preening. Mate just rests.

Blackcap in feeding at mouth of creek 300 ft away.

Other Chlors are active in mangroves across creek. Some Mono-Doublet series in flight.

Now both A's together again. Lots of feeding from mud. Without landing. Hunting crabs. Often successful.

One on bird lands beside the other. Utters short series of Monos as it comes in. But there is no other greeting or display.

Oglobes 7:56 am

Suddenly one A (♂?) flies up and across river to dead tree. Utters Mono-Doublet series in flight and after landing. Stands alert. Mate (♀?) follows. Lands in adjacent tree. First bird utters another Mono-Doublet series as incomer arrives. No TF. Then incomer flies to same tree as first bird. Lands 1 ft away

Both stand alert. Twist back BW's. Incomer stands with carpal joints out. Flex both BW several times. Then both relax. Then both flex over to another tree with little or no display. Then one flies back across canal.

All quiet 8:10 a.m.

Invisible Chlor in mangrove utters long complex series of notes. Many Mones — a few Doublets — many Mones — 1 Doublet — more Mones — many Doublets (gradually slowing down)

A's now separated, one bird on either side of canal. Some calling back and forth. Short series Mones by one bird. Series of Mono-Doublets by the other.

The other pair of Chlors across creek (the "B"s) seem to be quite calm. Perched far apart in different trees. Silent most of time.

8:28. See single Blackcap perched pole edge creek. Plunges into water. Then flies off into mangrove.

8:35. Flush one of the B Chlors from mangrove. It flies on to another mangrove. Utters Mono-Doublet series in flight. Lands. Stands in sleek, alert, semi-O type posture, continues a few Doublets. With V-D TF's. See sketch.

COMMENT: It is interesting that the A and B pairs of Chlors spend so much time within related, close regent and sound of one another without reacting to one another overtly. (More fragments.) An obvious correlate of the close crowding of the species. Also a good example of the Corniferin tendency to avoid unnecessary expenditure of energy.

Halcyon spp. are scale "improved" Coracias. Presumably the latter survives only because a hooked bill is slightly more efficient than a straight one for catching terrestrial prey. But the Kingfishers seem to be more specialized and efficient in all other ways.

Presumably increased terrestriality has evolved, independently, several times within the genus Halcyon (and its derivatives?)

Jan. 23, '79, V

8:25. It is getting hot now. Odors are spending more time inside mangroves in shade. Sensible enough

Stop observations 9:05 a.m.

Back at hill, see eagle (Spilornis ?) being chased by Brahminy Kite. The eagle is uttering howling noises. Almost certainly the "hornbill" that I heard at dawn a few days ago.

Coming back to Rest House hill after lunch, see single Dollarbird perched quietly 25 ft up in semi-bare tree

Going to drive along coast to the north this afternoon. Rain around 3:30 p.m. Gradually getting less.

No. 4 Unfortunately rain continues until 4:55

5:15 p.m. Area of immense rice fields and dispersed farms. Hear lots of White-throat Rattles and Quadruplets. See birds perched on high wires. Presumably preparing to fish in canals and ditches

January 24, 1979
Linda Delaney

Bund-canal-mangrove area again. Arrive 6:27 a.m. Scattered bird noises. Some cloud. Tide in creek is very low

Odors begin short (rising and falling) series of Notes almost immediately. First Note-Doublet series only, some minutes later. Then general lull ca. 6:58

COMMENT: Doublets the usual repertory of Odor is more complex than my preliminary account would imply. Thus, for instance, there may be some real difference between the short rising-and-falling series of Notes (perhaps a sort of song?) and longer and more variable series of "Rap" Notes, often more excited and urgent in tone, which may be more purely hostile

6:45 Single Blackcap perched quietly on stumps at mouth of creek just where it was same time yesterday

Single Alttis perched quietly on stumps in canal

First A Chlor flies to stumps in creek 6:51. With crab in bill. Single ovs crab after wary, lateral headshakes. Then flies off to unattim stumps near mate. I must use greeting (if any). Then both birds hunt crabs. Sometimes perch close together. No greeting at any time. Mates are always separate. All quite silent.

Both birds ignore Alttis which has flown to nearby stumps

Once one A does silent "Carpal Out" ("co") when landing near mate. Then relaxes. Both sit.

I think tide is still going out 6:55

Blackcap seems to have disappeared

Alttis is still around, but it has not made any dives.

See another Chlor, presumably a B, near where Blackcap was perched

One A suddenly supplants other bird on mud. I think that other bird was a (juvenile) Butorides. In any case, the other bird flies away unmolested, with squawk. And the Chlor stands on mud for some seconds with complete disregard. Then flies to part by mate. No greeting.

NOTE: Chlors usually ignore Butorides.

Alttis gone 7:05.

Both A's sitting quietly now: almost side by side. Every once in awhile one goes crab hunting. Usually no greeting on return. Only once does the bird which remained behind do PAG (and/or BW?) when mate returns.

Sun coming out 7:11 a.m.

Blackcap back in usual perch. B Chlor 30 ft away seems to ignore it.

Everything very placid (so far) this morning

7:25 Adult Butorides goes into mild threat display (plumes raised) when one of the A Chlors lands quietly 3 ft away.

COMMENT: All the local kingfishers seem to be intent purely on feeding now. There are only occasional Chlor sounds in distance. I suppose that the activity of marine kingfishers must depend more upon the tide than upon the actual hour of the day.

Sun behind clouds again.

Tide seems to be approximately at ebb now - 7:31 a.m.

A's continue to behave as before. Birds often do lateral headshakes when returning to mate after crab-hunting. At least once, mate does lateral headshake too? Contagion? Ritualization?

7:41. Good heavens! One of the A's flies to bank, catches relatively large crab, stands in mud with crab in bill. Suddenly it is swooped at by another Chlor, possibly mate. Perhaps more probably a neighbor. Attacker flies on immediately. Attacked does full Wings-spread on ground immediately after attack. One or both birds (perhaps only the attacker) utters harsh, loud, grinding "Kwar-arr" notes during the incident. Attacked bird then flies to shrimp. Swallows crab peacefully with much headshaking.

Adult Butorides again does mild threat when approached by Chlor-Ler ing this incident.

Tide starting to come in 7:50. Sun still partially veiled.

See Blackcap battering prey, presumably fish, in distance.

One A does slight CO on returning mate. Notice that wings are drooped without spreading. Exposing relatively bright blue rump. Is this typical ???

Sun coming out again 8:20. Burst of Mono-Doublet series from Bittern.

Then one A makes successful crab-hunting flight. Utters full Mono-Doublet series as it flies to perch, near Butorides, to consume prey

COMMENT: Feeding rate of Chlor is certainly much higher than that of such forms as the White throat

8:30 One A lands beside the others Apparently utters soft "Kuk" Note as it does so I have heard something like this before. But it certainly does not occur in all joinings.

COMMENT: Chlor presumably lacks red bill because it feeds in mud so frequently?

See Blackcap plunging in water. Presumably this species is not a crab-eater. Plunges again and again. Another relatively fast and frequent feeder.

One A on post in mud. The other A on post in creek 10 ft away. Suddenly, 8:50, a third Chlor (a B?) circles a few ft overhead. Utters thin but fairly loud Rattle as it does so. The A's do not seem to react vigorously. Third bird lands nearby 40 ft away. Then flies on.

8:54. One A plunges into creek. Apparently does not catch fish. Back to perch. Lots of BW. Mate flies off, catches crab in mud, flies off to adjacent mangrove. Bird on post in creek makes many more plunges into water. Each plunge followed by shaking and preening. 2 E. plunges obviously are bathing, not feeding. Then bathing bird flies off in same direction as mate.

A minute or so later, one of the A's reappears. Flies across canal. Utters Mono - Doublets - 1 Mono - 1 Doublet - 1 Mono - several Doublets in flight. Lands bare branch 20 ft up. Utters new series Monos - Doublets after landing. In alert posture No TF's at first, during Monos or first Doublets. But the last 3-4 Doublets are "slowed down". And these last Doublets are accompanied by V-D TF's. Quite extreme. But tail feathers never spread. Then the bird rocks axes. Just as the sign of mate that I can see.

Then bird utters series of a few Monos followed by many slowing Doublets. Doublets with TF's but no spreading. Then bird flies slowly back across canal. Lands, alone, on post in creek. Sets.

This would suggest that some Mono-Doublet scenes are attempts to "call in" mate.

Bird on part in creek sits some minutes. Then flies off silently to mangrove Presumably Mohammed joining the mountain

going on myself 9:25 a.m.

As I start to go, hear another burst of Mono-Doublets from mangrove and catch glimpse of rufous bellied bird in flight in some area. Blackcap? Being shared or supplanted by Chlor?

COMMENT: After watching the Chlors today and yesterday, I think that some of the display seen 2 days ago must have involved neighbors or rivals rather than (or in addition to) mates.

Going to Batang Berjutai again this afternoon. More or less sunny. Going to start in area slightly NW of town. Bridge over Selangor River. Some forest by road. Still very hot.

3:46. See single White-throat flying silently along edge forest.

COMMENT: It has just occurred to me that migratory spp. of Halcyon may have slightly different pairing arrangements from non-migratory spp. Viz the apparently single Black-caps here now (and previously the Black-bellied form seen in Liberia)

Near White-throat type "chalk" Notes in forest.

Go on to palm groves. See single White-throat on frond of Oil Palm (area poisoned by Sodium Arsenite). 4:35 p.m.

On to area where Stork-bill seen day before yesterday 5:02 p.m.

At this flies along drainage ditch. White-throat Rattles in distance. Dollarbird in tall dead tree.

January 25, 1979
Kuala Selangor

Jun. 25, 79, I

(86)

Arrive 6:25 a.m.

First Chlor vocs 6:30 Short series of "Kaa" Notes (Quadruplets) Then long series "Kaa" Notes by another ind. Then Mono-Doublet series by still others.

Tide is going out, but still far from maximum ebb.

Presumed A's Mobs in mangrove 6:35

Butorides already feeding in creek.

Blackcap at usual perch mouth creek 6:35 a.m. Apparently utters 6-8 "Kaa" Notes as it comes in and/or just after landing. Notes are very much like those of Chlor but somehow less penetrating (less nasal or metallic)

First A Chlor comes in a minute later. Utters Mono-Doublet series as it comes in. Second A arrives another minute later. Also utters Mono-Doublet series as it comes in. Both ends at fairly approx. 1 ft apart. Certainly no trace of countership or cop patterns.

All the local Bugs fed ins silent 6:40.

One A flies on crab hunt. Then to post near juv. Butorides & lands with tail elevated ↗ Is this hostile? Then flies to more distant post. Sits.

More crab hunting, apparently successful, 6:48

No greeting when one A rejoins the other on same post.

Chlors just sitting now 6:50-6:55. Is it too early for the crabs to be active?

Third Chlor appears on pole in creek between A's and Blackcap. Also just sits.

One A catches crab in mud. Utters "Kuk" as it rejoins mate on post.

Blackcap seems to be hunting crabs on mud bank now, 7:01. This species is a generalist here now! Possibly has a hostile encounter with a B Chlor in the course of its flights.

A's are crab-hunting rather more frequently, now 7:07 a.m.

Now there are 2 B's hunting between R's and Blackcap. One Butters short series Mono ("Raa"s).

Both A's and B's (and Blackcap) are relatively inactive now, 7:13, even though sun is well up above horizon.

One A makes crab-hunting flight. Obvious, unsuccessful. Turns around, flies back toward mate. Utters Mono in flight during return. Continues Mono after landing by mate. Then switches to Doublets, with U-D TF's. No spreading of tail feathers. Then subsides. Presumably it vocalized because it was nervous at missing its prey.

COMMENT: A's and B's cannot be more than 200 ft apart. Others do have small territories

Speak of the devil! One B flies by with prey in bill. Well within its own territory. But one A flies off to chase it. Apparently trying to steal food. Chase is quite silent. A breaks off chase, flies back to its own territory. Lands alone with CO. Sits.

Then flies to point on stream. Right next to adult Butorides. Utters Rattle in flight. Lands with extreme Wing spread by mate. Who does silent CO. Flies to territory

Silent Jowled Then all relax

Attempts at food stealing must be correlated with smallness of territories

0 photos 7:30 a.m. One A does WF as she approaches. Obvious flight att. mov. But the birds really are very tame. Then one flies to mangrove. Utters Mono in flight. Then switches to Doublets after landing. With U-D TF's. 2 TF's with feathers spread. Other TF's without spreading.

Then one of the B's utters Mono-Doublet series. A in mangrove answers in the short series Monos.

Then A in mangrove flies to point 3 ft from mate. Both birds do silent

Wingspread. Hunstand in CO. Hunrelax.

One flies to another perch. Joined by mate with "Kuk".

0 photos again 7:40

NOTE: Rapid "Kuk kuk kuk kuk kuk .... " sounds heard on earlier days are uttered by golden backed woodpeckers.

On to Bountang Bergantai later in morning. Pass lots of White throats on road. Hitting lots of Rattles and Quadruplets. Presumably breeding.

See Stonebell on wire at almost exactly same place seen a few days ago. Flies silently into forest.

In the afternoon we stay at the Gap, below Bukit Timau, supposedly at an altitude of 2400 ft. Start walking down road 4:30 pm. It is sunny, but cool. Not many birds audible or visible at the moment.

Lots of langurs, wild pig, miscellaneous birds, but no Ceraciformes.

January 26, 1979
The Gap

Going to walk along highway again this morning. Starting out @ 7:28 a.m. Still quite dark. Low cloud. Some mist or light drizzle.

Rain is coming from east, so I walk west. Visibility is bad. Some miscellaneous bird sounds, but nothing like hornbills (or gibbons for that matter).

Stopping 7:45 a.m.

Go along road between Rawb and Kuala Lipis in late morning. Begin to see White throats by rice fields.

12:45 pm Near Kuala Lipis. See 2 Dollars perched 100 ft apart dead trees by river. One makes flycatching flight back. Does a lot of D-V TF's after landing

O plucks one up. It flies off and lands near the other. No greeting. But other stands in alert posture, looks from side to side. HF ??? Later on, one makes flycatching flight. Also does D-V TF's after landing (alone)

Back to same site 2:00 pm. Find the 2 Dollars sitting side by side on same branch. Only inches apart. Obviously mated

White Throat in tree 30 ft away

The 2 Dollars face one another in erect alert postures. Then suddenly roll their heads. Up-around-down-around. Each bird does this 3 or 4 times. Pattern is highly distinctive per se; but the vertical components are reminiscent of the Bowing of Coracias (although much less extreme). Head-rolling is accompanied by rather soft Growling. More or less irregular guttural sounds – impossible to transcribe in letters. Then the 2 birds sit silently again. Then another bout of face-to-face Head-rolling and Growling. Then sit again. Still alert and upright.

Then one bird (♂?) starts to preen in stylized manner. Underwing away from mate. Each time, wing away from mate (especially carpal joint) is partly raised. Effect is very heraldic. Obviously ritualized. Each bout preening is silent. Can't see bill movements. Bout – pause – bout – pause – bout – pause. Then preening bird flies off on fly-catching flight. Silent. Lands on tree 20 ft away. Silent. Does a-7 D-V TF's after landing.

Later on, the other bird does fly-catching flight. Lands 6 ft from mate. Mate Growls without special movements as its mate comes in. Mate lands silently. Does D-V TF's. Sits.

NOTE: There may be a 3rd Dollar here. We hear loud croaks or raps from rubber plantation across road.

Everything calm 2:18. Dollars preening in heat. Mate are going on.

2:40. See single White Throat flying along forested edge rather large insect.

3:45 Near Rain. See single Southern Red Headed, Anthracothorax convexus,

Sounds also Buzzes

flying across ricefields. Lands in large tree. Then flies on & silent throughout

January 27, 1979
The Gap

Start out 6:15 a.m. Quite a lot of fog (cloud at Gap still). Drive down road to east. Fog not nice, extensive at road level. Miscellaneous bird sounds begin around 6:30

Stop and walk 6:45. Ca. 1½ m. from Raub (5 m. from Gap.) Forest one side of road. Semi-open on the other. Mo Coraciiformes (recognized). Go on further down. 7:10 a.m. Go on for a mile or so. Area dead trees, forest, small stream. Still nothing. Go on. Do not recall less than 7 m. from Raub. Second growth scrub; cacao plantation, dead trees.

8:03. Flush single Dollarbird from dead tree. Flies off & down.

A little further up hill, hear Chatter-like burst of hoarse, buzzy, slightly twanging Rollps. Sounds like Dollar. Then see single bird perched 30 ft up in dead tree over cacao in valley. Setting up like now. 8:10.

Then lots of display. Fast and mutual. Difficult to follow. But some things seem to be clear.

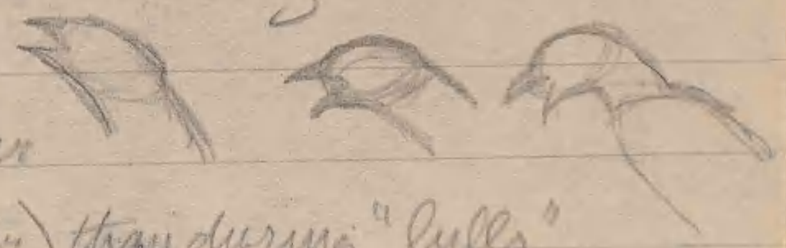
First a second Dollar flies up, starts to land by first. This produces burst of vocalizations. Probably by only one bird, but I can't tell absolutely. Eventually a rapid burst of short notes develops into longer notes. Perhaps transcribable: "Kuk kuk kuk kuk kuk kuk kaak kaaaaah kaaaaah kaaaaah kaaaaaah kuk kuk kuk". Last notes print "subsiding", not as fast or urgent as fast notes. All notes are rasping, buzzy, hoarse, harsh, and loud. Long Dollar lands & veers off at last moment. Flies away.

Back a few seconds later. Perched bird in alert posture, certainly utters

some vocs as incomer approaches. Possibly only a few growling "Kuh"s. But incomer centainly vocalizes loudly during approach "Kuh kuh kuh kaaah kaaaah ...." series. Then lands only inches away from partner.

Both birds facing same direction. Both uttering growling "Kuh"s. Quite fast on the average, but varying considerably both in loudness and rhythm (frequency). Newcomer also does D-U TF's after landing. Both birds also do a lot of HF and related patterns. Sometimes single flags, sometimes repeated flags. Latter may develop into looking from side to side. One bird (♂? – see below) also does several lateral Head-shakes (i.e. very fast movements). The HF's of the 2 birds are not particularly well coordinated with one another. All of them, and the periods between flags accompanied by the irregular growling (still recognizable "Kuh"s and modifications thereof). Usually not very loud. Both birds in more or less upright alert postures throughout. Some of the HF is very stiff and ceremonious. Other flags look less ritualized (uniform).

Every now and then (at least 4 times during this particular encounter) the 2 bird turn to face one another (more probably) always begins much the same as seen yesterday. But today, the vertical components were usually or always more conspicuous than lateral components (although the latter certainly were not absent). D.E. performance rather more like conventional Coracias Bowing. High point of Headrolling is quite high. But low point is not very low (not as low as in Ind. C. benghalensis) More or less comme ça:



Headrolling accompanied by vocs. Some regular growling. Probably more rapid and regular (and louder) than during "lulls" between Rolling. "Kuh"s probably develop into "Kaah"s at times. Rolling on the whole is quite vigorous. Lasts several seconds (10-15?) at a time.

The Headrolling is never (neither now nor later) accompanied by TF's. Postures

there ever any traces of WF's. (The species probably is too "aerial" to "need" WF's.)

Between bouts of Headrolling, the birds relapse into lower intensity Growling in silent posture. And either one or both may do (more) D-U TF's. (NOTE: TF's were quite common this morning — see also below. They certainly were most common after landing. But they also occurred quite conspicuously at other times.)

COMMENT: the TF's of this species do not seem to be closely linked, internally, to any of the vocalizations. A separate complex.

Every once in a while, the birds would stop Growling, sit silently in silent for some seconds. Sometimes still with HF and related patterns. (And even TF's.)

NOTE: When the 2 birds are sitting side by side, it is obvious that one is larger than the other. Presumably, sexual dimorphism.

The birds begin to make flights after the first encounter observed. At first each bird separately. I am sure that both birds made individual flights — but I think that one did so more frequently than the other.) Flights very fast, darting, slightly erratic, but roughly circular. Not high. In fact, sometimes quite low — just over bushes. Possibly flycatching. But more probably "just" sexual display. Each flight very long at first. Flying bird always utters loud vocalizations as it takes off and begins flight. Usually or always a few preliminary "Hute" Notes, then a few (2-4 or 5) loud screaming "Haaaaaaah"s. Some screams noticeably higher and shriller than others. Real shrieks.

At first, the flying bird always rejoins its partner, landing only inches away. Incomer may vocalize (again) as it comes in. More growling "Huh"s — & screams. (It is my impression in retrospect, however, that approaches are less noisy than departures.) The perched bird also vocalizes as its partner comes in. But usually or always only more or less irregular Growling "Huh"s. (It is interesting that departures are so really noisy. Perhaps the birds are inhibited from screaming by the presence of the partner in close proximity? Be that as it may, I doubt that it would be useful to describe the

sounds uttered in flight as "Flight Calls" in the usual sense. They seem to be expressions of high intensity hostility.)

After one bird rejoins the other, they both resume intermittent growling with HF's and related patterns (and some D-UTF's), alternating with bouts of Head-rolling, as before. All very tense.

Once, both birds fly off with sharp but still harsh "Kuk" Notes (apparently an alarm version of usual "Kuk") when a single Grackle or Red Thyroid (Graccula religiosa) lands on branch 10 ft away.

NOTE: Grackles seem to be common here. Probably 6-7 birds (at least). Conspicuous and (also) fairly noisy.

After 10-15 mins, the Dollars seem to calm down a little. Still flying-rejoining as before. But sometimes bird that has flown just comes rejoining for some minutes. Often lands, in the meantime, on another dead tree, 30 ft away, or (2) trunk(s) of adjacent forest or overgrown plantation. Flights accompanied by vocs as before (at least at beginning of each flight). When rejoining does occur, there is mutual Growling, HF's, etc. as before. But little or no high intensity Head-rolling now.

A new development is that sometimes both birds fly off more or less together from either the same or different perches. With usual vocs. These flights sometimes develop into apparent pursuits of one Dollar by the other. One flight began when one Dollar flew straight at the other. After flights, the 2 birds may land together or apart.

One joint flight appeared to develop into a chase of a Grackle flying by. Direct attack or redirection???

When a bird is perched alone, it may sit silently or utter occasional "Kuk"s, growling series of "Kuk"s, and/or sharper "Kuk"s. The latter may be provoked by sight and/or behavior of Grackles.

COMMENT: Certainly these Dollars are hostile to Grackles. Presumably the 2 spp. compete for nest holes. Glenister notes that the Grackles are fond of tall dead trees. This

morning I got the distinct impression that the Dollars were nervous of the Grackles — that the Grackles were dominant. This is curious, as the Grackles are only very slightly larger than the Dollars (if at all).

Once, one of the Dollars, sitting alone, looked down at perch (sort of 3D), silently. Very Coracias-like but not outwardly ritualized in this case.

Several times, one of the Dollars preened while sitting beside partner. Preening brief, lowered, possibly ritualized. But over wing. And on side toward partner!

There seems to be some slight variation in TT's in some circumstances. Twice I saw a bird begin a series of TT's after landing with an extreme V. Followed by D-U, emphasis on down component as usual. Perhaps the initial V's were simply "balancing"? One of the V-D performances was done by a bird landing beside its partner. The other was done by a bird landing alone.

Everything seems to be quiet 4:00 a.m. The 2 Dollars are sitting in different trees 100 ft apart. I break off observations

COMMENT: I can't really be sure what all this was about. It could, conceivably, have been a hostile encounter between rivals and/or with Grackles. But I doubt that the great majority of the interactions must have been "countertrips".

NOTE: If the birds observed yesterday and today were typical, then mated birds stay closer together, and come together more frequently than do mates of all or most other species of rollers.

COMMENT: The vocalizations of the Dollars seem to be an intergrading continuum. "Kule" ⟷ "Kuk" ⟷ "Kaak" ⟷ Scream ⟷ Shriek

Could this be related to aggressiveness???

Back to Dollar area 4:35 p.m.

One Dollar flies around with "Kuk" Notes and "Kaaaak" Screams. Then lands silently, alone, in distant tree.

2nd mate in another dead tree 150 ft away.

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Every once in a while, the nearer Dollar vocalizes. Short series "Kuk"s, invaded with one brief scream.

One bird makes flycatching flight, with "Kuk"s. Lands even farther away from mate.

Then one flies off. One bird. Flies off silently. Lands 2 ft away from mate. No greeting. One flies off to adjacent perch when ive approach. Lands silently with V-D-V TT-s. Sits.

Walk around bend, then back 5:10 pm. See Dollar perched high in distant tree. Appears to be alone. Utters 6 or 7 short series (5 notes) of descending "Kuk"s. — — —. Rather chatter-like. Could this be song? Bird sits silent for a while. Then resumes short series. All quite stereotyped. Series uttered at irregular intervals. Up to 9 per min., 3 per 15 sec.

Now I see that mate is sitting quietly in dead tree several hundred ft. away.

A few short series may have only 4 or 4½ notes

Mate flies away out of sight. "Singing" bird utters short series more frequently. Up to 13 per 1 min. Then slows down again.

NOTE: the Grackles are still around. But the Dollars have paid no attention to them this afternoon. This may suggest that the interspecific hostility this morning was reduction.

I suppose that these "songs" are essentially homologous with the Rattle-flights of the Blue-billed Roller.

5:30. The remaining Dollar is uttering only occasional "bursts" of short series now. But the series have not changed in form.

5:35 Now the Dollar is silent. But still sitting patiently.

Flock of 30 rock pigeons settles in tree above Dollar. A minute later, the Dollar flies away silently. Lands silently in tree 1000 m. away. And now we see that mate is sitting quietly in another tree even further away, 5:45 pm.

Both birds quite silent now.

One bird suddenly starts to utter irregular series of "Kuk" Notes. Sometimes changing to "Kea" at climax of a series. With occasional D-V TF's. Also begins to look from side to side and downward. Obviously getting ready to fly. Its partner responds by doing silent D-V TF's, also looking around.

Then suddenly a Grackle flies to a tree near us. (As it turns out, this is obviously the "nest tree") 5:45 p.m. A Dollar flies after it, apparently in hot pursuit. With "Kuk"s and Screams. At this point, I lose track of the details. But the other Dollar apparently comes over also. And a second Grackle also appears somehow. When the chase is over, the 4 birds are distributed as follows: one Grackle (♂?) is perched high on top of nest tree, perhaps 100-125 ft above ground. The other Grackle (♀?) has gone into a nest hole about 3/4 of the way up; one Dollar is perched on a side branch of the nest tree, slightly below and about 10-15 ft from the Grackle nest hole; and the other Dollar is perched about 70-80 ft up in another dead tree (Tree B) about 15 ft away from the nest tree.

All birds calm for a moment. Then the 2 Dollars begin flights like this morning. One bird at a time. The birds alternating flights fairly, but not absolutely, regularly. Each bird must make at least 5-6 flights. Each time with mixed vocs. as it goes. Series of "Kuk" Notes leading to "Kaaaaah" Screams. No shrieks this afternoon. Each time, each bird returns to the perch from which it flew. Little or nothing in the way of landing vocs. TF's after landing. Usually or always beginning V. Then D-V-D-V.... Just V can be quite extreme. But I notice that wings are not drooped, tail is not lifted between wing tips. Rather the touching wing tips are raised by the tail as it goes up.

All the individual flights are low. Down to the tops of the canes and then back again. One makes the pertinent suggestion that the low-ness is an adaptation to display the striking wing patterns.

During some of the latter flights, the flying bird flutters close to the base of

nest tree, perhaps 20-25 ft above ground (just above the tops of the cacao-trees — which are small here). One bird (the ♀ I think) actually clings to the nest tree trunk for a second during several flights. Probably still screaming as it does so.

I thought that this might be hostile "advertisement" or "demonstration" of a future nest site, designed to impress the Grackles, like some of the hostile performances of White-throated Kingfishers (see notes from Mabaloi/Ipuram). But later observations would suggest that this view should be modified (see below). Certainly the Grackles do not seem to be impressed. The Grackle on top of the tree just sits and preens a little. The Grackle in the hole rests with her head out for several minutes. Then flies away. I think that she probably laid an egg. Her mate stays behind for some minutes more. Then flies away too.

At about this time, one of the Dollars makes another flight, with vocs., and lands beside its mate instead of returning to its former perch. Little or no greeting. The birds stand alert side by side. Lots of Head flagging of all types. Also some TF. Gradually relax. Then they start a few "Kuk" vocs again. And make a few more individual flights. Much as before. But this time, at least once, the presumed ♂ flies to the "potential nest hole site" and clings and flutters there. Then goes on to perch previously occupied by presumed ♀. While the ♀ runs on perch previously occupied by ♂!

NOTE: this last performance could not have been "demonstration". Presumably these Dollars are considering nesting in earnest.

NOTE: As far as we can see, there is no actual hole, yet, in the trunk of the tree at the spot being visited by the Dollars. (Although there are many other holes, in addition to the one "occupied" by the Grackle, further up.)

Eventually one of the Dollars flies off to distant cacao grove. Disappears from view. Presumably settling in for the night, under protection of canopy leaves. The remaining Dollar just sits on its perch (on tree B now), apparently

quite relaxed. No trace of "song".

All quiet for several minutes. Then a rapid series of complex interactions, involving 6 individual birds of 3 different species. The first thing I see is that the Dollar in the cacao reappears and chases a Grackle to the nut tree. I see that a large woodpecker, apparently Dryocopus galeatus, has landed low on trunk of nut tree. Certainly both Dollars fly to attack the woodpecker, screaming as they do so. I think that the Grackle also attacks the woodpecker. Apparently second Grackle appears and goes into its hole. While the first Grackle, presumably the ♂, returns to usual perch on top nut tree. Dollars continue swoops at woodpecker for some seconds more. Then both return to perch in tree B.

Is this woodpecker some sort of nut predator?

Then a second woodpecker, same species, also appears on trunk nut tree. The first woodpecker gradually moves upward along trunk. Passes the Grackle hole without showing any interest. Can't tell if it is feeding as it goes or not.

One of the Dollars disappears about this time. Presumably back to cacao. The other Dollar just sits. Not so excited now.

Then the 2 woodpeckers fly away. One Grackle (probably both) fly (ies) away a few seconds or minutes later.

Obviously this tree is ideal for hole-nesting birds. The Grackles already have a nest. The Dollars apparently plan to have a nest there in the near future. And perhaps the Dryocopus galeatus will also nest there. (I suppose that some woodpeckers must have made the existing holes at some time in the past.)

Again, it is also obvious that suitable nesting holes are at a premium in the tropics.

After all this excitement, everything becomes calm again. When we finally leave, 6:30 p.m., one Dollar is sitting calm and relaxed, more or less fluffed

and hunched, while all the other birds are out of sight.

COMMENT: the Dollars certainly did not do much feeding this evening at twilight.

January 28, 1979
The Gap

Going to look for some Dollars again this morning. Arrive 6:26 a.m. Just starting to get light. Some cloud. Fog in valley. Some miscellaneous bird sounds, but not very many.

One Dollar is already present top B Tree 6:33. Looking from side to side in alert posture. Occasionally utters single "Peek."

The other Dollar seems to be sitting quietly in distant dead tree. No birds are in view of our watcher.

6:40 Near Dollar utters a few "Peek"s in sets of "Peek"s. Also does D-V TF's.

6:44 Near Grackle is in tree. 2 Grackles land in next tree. Sit quietly. Near one uttered previous "Peek" [illegible] Near Dollar. Generally the other Dollar is or moves into near tree. (Difficult to see, as fog is spreading here. But I see to hear "Peek"s by 2 individuals.) Near Dollar also utters a few "Peek"s. Flies to dead tree again.

No! The other Dollar is still far away.

Near Dollar flies to adjacent perch 6:49. Sounds with D-V TF, "Peek" Notes. Near sits with occasional "Peek"s.

One Grackle has disappeared. Into nest hole?

Everyone quite, silent 6:55. Fog is lifting. But it is rather cool.

Near Dollar utters single "Peek" Notes 6:57. Near sits quietly again.

Hen flies off silently. Lands 4 ft from fav Dollar No greeting. Both curled sat scatter fluffed, looking around. One curled (♂?) utters "Kuk"s as Grackle flies by. Then begins to preen normally.

7:10. Both curls fly off with "Kuk" - screams. Both land in B tree. In class apart. Utter "Kuk"s with HF after landing. Then another screaming flight by both. Downward. Visiting potential nest hole site? Then both land far apart in B tree.

Then single flight by one curled. With "Kuk"s only. Back lands beside partner. Both do "Kuk"s - Growling. One curled does ritualized preening under fav wing. The other begins Headrolling with growling. Then both alternate periods of Headrolling & growling with periods of standing & HF. Also TF's and some more ritualized preening under fav wing.

Another single flight with screams. Flying curled rejoins mate. Some brief growling (without Headrolling?) Then both sit with occasional HF's.

7:20. One curl flies off silently. Goes very far and high. Apparently hawking for insects. Mate follows. Also hawks for insects. Not very close to partner. Then both call. Land far apart, high in distant trees.

Then one begins "Kuk"s. Both fly to B tree with screams. Land side by side. Stand with HF's and TF's. One flies off, low display flight, with jumble of both "Kuk"s and screams. (This combination probably is quite typical) Then lands in B tree 20 ft from mate.

Then first one, then the other, off on silent feeding flights again 7:26. Go high and far away. Out of sight.

One back. Lands high in distant tree. Utters single "Kuk" notes. Then the other bird appears. Both fly to B tree with screams and "Kuk"s. Some "Kuk"s accelerated into chatter. Land 10 ft apart.

Then mutual flight, usual low display form, with usual vocs. Back

One Lurid lands in B. The other in next tree.

Both utter "Kuk"s when Grackles reappear 7:31 a.m. One Grackle goes into next hole. Both Dollars relax.

Hen both fly off silently. Land in different distant trees. Hen off again on feeding flights. Go high. 200 ft plus. Back and forth in irregular courses. And now I see that there are 2 more Dollars feeding in air. All 4 Lurids busy. Soldiers come within 10 ft of one another. Often far apart. Feeding is silent. Apparently quite peaceful. This also is probably typical.

One of the Local Dollars comes back several times. Lands in high tree. Utters single "Kuk" Notes. Hen off to feed again. No trace of "Song" (i.e. mate probably visible all the time).

7:45. Now both birds back. Letting far apart in distant trees. One ignores a drongo (probably Bronze) not far away.

Hen both fly to next tree with screaming-chattering ("Kuk"s) flight. Land close together. Silent HF's and TF's. Then they begin usual alternate display flights. One Lurid repeatedly flutters in front of pot. next hole site. Whenever one Lurid rejoins the other, there is mutual (but not coordinated) HF-wing and TF-wing. Usually or always silent. (Growling seems less frequent today than yesterday morning.) Eventually settle apart. One bird on nest tree. The other on B tree. The latter then flies away to more distant tree. Both sit quietly. 7:54 a.m.

Hen far Lurid disappears. Feeding again. Then the other goes off too. See them feeding high again. (COMMENT: this species does not seem to have any high aerial display. Quite different from Halcyon spp.)

Now there are 4 Dollars feeding in air. This does provoke some "Kuk"s and a few semi-Screams. But not, as far as I can tell, any swoops or scares.

I suppose that feeding Dollars must have to tolerate competitors, at least to some extent, because suitable insect prey is patchily distributed and mobile, in

swarms, etc.

NOTE: feeding flights, even at the beginning, can be distinguished from low display flights because departure is silent.

One Dollar back 8:04. Apparently lands in cacao. Another circles overhead uttering "Kuk" notes.

8:08. Now there is single Dollar perched in distant dead tree. Utters many single "Kuk"s. Then shuts up. Then more "Kuk"s. Then silence again. Three "Kuk"s as grackles fly by on way to nest tree. Then flies up in screaming-chattering flight over and then around and around nest tree. Eventually lands on top B. Utters many "Kuk"s and "Knaark"s after landing. Even though mate is not close by at the moment. I.E. sounds provoked by presence of grackles.

Then mate does reappear. Alternate display flights. Some Head-rolling and growling, plus silent HF-wig and TF-wig when one rejoins the other. Then the 2 birds separate. One perches on nest tree. The other on B tree 8:17 a.m.

8:23. Pair of Slender-billed Crows flies in. Dollars fly from perch to perch with "Kuk"s and "Knaark"s. But they do not actually attack the crows. Then the crows fly on. Dollars relax. Etiquette.

One Dollar lands beside the other. Little or no greeting. Then one flies away to another tree. Mate follows. Lands a few inches away. One mumbling "Knaar" Note as greeting. Then some apparently silent Head rolling. Then one bird does silent display flight. Nervous, very low intensity. Back. Both birds do a little silent HF-wig and TF-wig. One utters 3 arouses. Apparently awakes mate off perch. Latter flies off to distant tree. Quite silent.

COMMENT: this species is showing the full Coraciiform tendency to turn dull after a previous day of exciting display!

One Dollar off to feed again 8:30. Ignores Greater Racket-tailed Drongo also hawking for insects.

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The other Dollar eventually goes to feed also.

Both back with Screaming-Chattering flight. Land together in nut tree. Then one flies off to usual perch in B tree. Both sit quietly.

Then a few display flights. Of usual types. One bird continues visits potential nest hole site again. Then both birds sit silently in different trees again.

8:50 a.m. Sun is coming out and it is getting warm.

One Dollar utters a few "Kaah"s when Grackle reappears.

All seem dull. Leaving 9:00 a.m.

Going to drive along road between Rand and Kuala Lipis in the afternoon

Lots of White-throats by rice fields.

Arrive area just outside Kuala Lipis where first pair Dollars seen a few days ago. 5:40 p.m. Pair still there. Some flying about with screaming and chattering. Head rolling and Growling when the 2 birds land together. There also are 2 large green barbet-like types in same tree, and a falconet perched in nearby tree. As far as I can tell, the Dollars are not paying much attention to the barbets. The barbets eventually move off.

The Dollars also ignore the falconet while it is perched. But then one Dollar flies up to chase the falconet when it flies. At first with screams. Then silently.

In the confusion, one Dollar disappears. Its partner remains, sitting quietly.

Then I see the partner chase a small bird in air. The falconet again? Chase is silent.

Is the falconet a competitor for food or for nest holes? Or possibly a predator up on young?

Now the 2 Dollars are perched 10 ft apart in adjacent trees. One flies over to join the other. Only HF as greeting. Then one flies (back) to adjacent tree 5:53 p.m.

Everything very peaceful. Then one Dollar makes short flight from one tree

to another. Silent. Then I see that falconet is sitting peacefully in a tree 20-30 ft away. Dollars show no inclination to attack it now.

One Dollar makes short feeding flight 6:10 pm. Lands in same tree as partner. But 10 ft away. Utters "Kuk" notes. Then burst "Kuk"s and "Kaak."

Getting dark now. Lenses will be hard balls.

Another feeding flight. U-D-V... TF's on landing. Then one flies off high and far away 6:13 pm. Gone to roost.

Falconet flies off 6:16. It is not attacked by remaining Dollar.

Dollar utts. But then falconet (definite) flies by again. And Dollar chases it vigorously. Falconet squeals, but Dollar remains silent.

Does Falconet also hawk after insects at dusk? It certainly flies around a lot.

6:21 Dollar starts to utter "Kuk"s. Accelerating into Chatter. Then flies to lower perch same tree. Then utters short screams as mate comes back, lands 20 ft away on top of same tree. Lower bird continues to utter irregular medley of "Kuk"s and "Kaak"s. Then flies down, clings to trunk of tree approx. 15-20 ft above ground still vocalizing. Then back to former perch.

Do these birds also have a home a potential nest hole site?

Both Dollars fly over to leafy tree 30 ft away. Silently. Immediately, a barbet (same species seen earlier) flies into hole in tree vacated by Dollars. And a minute later, 2 falconets fly into adjacent tree (even farther from Dollars than the tree with the barbet hole and Dollar potential nest hole site. The Dollars make no effort to attack either barbets or falconets. Remain quite silent in fact. Piebald, male, roosting now 6:32.

ADDITION: I say that second barbet flew into tree shortly after the first. It looks as if the barbets may have been afraid to come back while the Dollars were around.

Yuk of the devil! Doller flies back to "nest tree". Lands silently and ignores barbet a few yds. away.

Leaving ourselves 6:40 pm

NOTE: the falconet observed today was the Black-thighed Falconet, Microhierax fringillarius. God knows what the "barbet" was. Presumably a large species of Megalaima (possibly chrysopogon — dark crown, yellow-cheeks, green body and wings). But it looked rather slender, almost woodpecker-like.

Glenister says that the falconet does hawk for insects. He says nothing about its nesting habits. But King et al says that falconets both nest and roost in tree holes.

It would appear probable that the Dollars show overt hostility primarily toward other species with which they compete for holes. Their hostility to falconets may be sharpened by competition for food.

January 29, 1979
Ruth

Going exploring this morning. Along road to Church

9:15. See Kingfisher in trees by river. Either Whitethroat or Black-cap

Further on, see Dollar high in dead tree edge new cacao plantation (Quite very low still). This does seem to be a favorite habitat of the species.

Then a single Rhinoceros Hornbill flies by, high in distance.

10:08. Finish Further on. Area of second growth forest or woods. See single ♂ Black Hornbill, Anthracoceros malayanus, perched 30 ft up in Jackfruit Tree (Also Breadfruit) Kittens 2, and then 1, very hoarse "Kaaaah" Notes. Lits. Flies off silently.

The large hornbills here do not seem to be very gregarious!

June 30, 1977
Rain

Back to Dollar area on road to Gap. Arrive 6:20 Still dark
Just Dollar vocs 6:30 Very creaking, almost rattling "Krah"s
Bud pecked in dead tree edge plantation.

Partner appears silently to next tree 6:38. Utters soft "Krah"s. Then sits silently for minutes on end.

Both Dollars fly silently to B tree when Grackle flies into next tree. 2-3 Grackle defunkt, remainder Dollars sit 4 ft apart. Both quite silent 6:47

One Dollar utters chatter-like series of "Krah"s, then bug screams, when large black woodpecker (same species seen a few days ago) flies into next tree. But neither Dollar attacks. They certainly try to conserve energy at this hour of the morning. (As usual, it is cool here now.)

ADDITION: "Krah"s toward woodpecker were accompanied by D-U TT-s.
Woodpecker seems to have moved on 6:55. Both Dollars silent again.
As usual, the Dollars ignore Greater Racket-tailed Drongo flying by. If they do not usually react to food competitors who are not also nest competitors again.

Gap Dollar starts to look around, do D-U TT-s. Then relapses into usual silence again.

Fog spreading up valley 7:07 a.m.
We leave 7:15 a.m.

CORRECTION: the plants that I called "cacao" above (in connection with the Dollars between Raub and the Gap) were young Rubber

February 2, 1949
Bohorok

See p. 121 ⟶

Staying at station (WWF Orang rehabilitation project) here. Edge of hill forest, only a few hundred ft above sea level. Awling says that he has seen 6 species of hornbills and 9 species of kingfishers in general area.

Start out early in morning. Weather is perfect. But I have some trouble fording stream. Only start observations 6:50 a.m. Full light.

Not a great deal of bird sounds.

NOTE: this is beginning of dry season

1 Coraciiformes by 8:30 a.m.

According to some other wardens, most of the hornbills found here are seen as single individuals or pairs. Only the Black Hornbills, Anthracoceros malayanus, and the Bushy-crested Hornbills, Anorrhinus galeritus, are often seen in groups.

But yesterday evening, ca. 5:00 p.m. We saw a family group of Rhinoceros Hornbills, 2 adults and 1 apparent juvenile (small casque) flying high across river (Bohorok River). Uttering hornbill-like sounds as they did so. Landed high in trees. Then flew on and disappeared.

Start new walk (upstream) 10:15 a.m.

11:10 a.m. Watching & hearing vocalizing Single large hornbill flies high overhead. Unidentified. White border to wing. Probably southern Pied.

A few minutes later, pair of Helmeted Hornbills, Rhinoplax vigil, flying going in same general direction as just heard. Large fruiting tree? (One of the Helmeted has long tail. The other does not. Adult and juv.?)

All 3 hornbills are silent in flight.

Back to camp 12:10 p.m.

Going for another walk this afternoon Same path as early this morning Starting 3:25 pm Bright and sunny Lots of hunters around

4:32 Lil Green Rail-tailed Drongo-flycatching on ends of shorts of troop of Long-tailed Macaques (Note: according to the wardens of the rest house, the hornbill Berenicornus — presumably a close relative of the African Tropicranus — does not associate with monkeys. Although it does occur inside forest, below canopy.)

Stopping 5:20 pm

ADDITION: The "wardens" mentioned above are Chris and Ellen Schürmann. He has been working on Orangs at the Ketambe Station. For a Ph.D at Utrecht

February 3, 1979
Bohorok

Going to work on a new path (to the Orang feeding place) Steep rise through heavy forest. Quite a lot of bird noises, including songs, by 6:25-6:30 a.m. Everything much quieter by 6:50

COMMENT: Despite the songs heard earlier, I get the general impression that this is not the breeding season (at least not the early breeding season) for most birds here now. Yes, for example, the gestures of the hornbills.

Here is a rather surprisingly strong wind, even in the forest, today

8:20 a.m. Hear some very loud single and double notes from large tree near feeding station. Grunting-Resounding. Here can hardly be from anything else than hornbills, but I can't see the birds

10:05 a.m. Area between house and feeding station, mixed second growth and some clearings and old large trees. This is where Conrad Aveling has seen the Red-bearded Bee-eater, Nyctyornis amictus. Hear several voices which sound like descriptions of the "call" of the species: series descending and accelerating "Ka" notes. Quite loud and hoarse.

Feb. 3, 1979, II.

(III)

Not particularly chumbling. Lots staccato thru some Melospiza spp. Unfortunately, bird is deep in bell in area of thick "scrub" and out of sight

Stopping 10:40 a.m.

Going up same path in the afternoon

A few hermit calls sounds 4:00 p.m.

4:13. Rosalind thinks she hears a Redbeard a little further on from spot where I think I heard one this morning. She says that they have seen "a" Redbeard at both places. Could there be members of a pair in adjoining territories? (Certainly the birds here seem to be very non-gregarious)

NOTE: this second area is full of slim saplings & under tall and large trees; fruit looks rather second growth. Deer flies & gnats.

Drifting more. Stopping 5:50 p.m.

NOTE: the whole reserve here is called Gunning Lenser

February 4, 1979
Boborek

Same path to feeding station. Start early. Weather clear but windy. A moderate amount of bird noise ca. 6:30 a.m.

Almost dead silence by 6:45.

7:30 See single Redbeard. Perched 8 ft up edge "clearing". Approx in area where I heard sounds yesterday. Sitting absolutely quietly. No flocks or bobs of any sort. Flew off & away, silently.

NOTE: it has turned cloudy & still windy and relatively cool. I doubt if many large insects are moving yet.

Wait and watch for some time without seeing bird again. But something in neighborhood is uttering deep, guttural "dark" notes which could be

Common Yellowthroats always single Bell Vireo is also a black Redstart
Swell also heard during the notes & clean

I start walking again 2:35 & Still Cowbirds, Flycatchers and Miscellaneous bird sounds, but nothing very long-like I am starting to emerge.

9:50 See both Oranges (Bronze? Orchard?) and several Pairs of Flycatchers in large mixed flock in mixed, scrubby type vegetation But appear with no Yellow-throats.

Stopping observations 10:15 a.m.

Start along same path again 4:30 p.m. Quitting for evening at 5:45 p.m.

When the rain starts to come down in buckets

COMMENTS: the Redbird does seem to be like the forest Flycatcher species in many aspects of social behavior. Habitat may be more important than feeding habits in this particular case

The fact that I did not hear any Redbird sounds today would seem to be further confirmation that the species is not breeding here now.

February 5, 1977
Belmont

Same path again. Arrive area where Redbird seen yesterday 6:00 a.m. Clear. Windy. Little rattle birds

6:30 Hear what might be Redbird sounds. Seems hoarse "Tear" Notes "Tear up Tear Pearls" answer to Big one number series rattle for seconds

6:30 Hear a still a single bird flying around among trees

6:57 Hear what sound like Cardinals in tall tree some distance away Rattle mixed, train getting, double notes. Birds invisible

Sun coming out 7:07 Everything quiet

Feb. 5, 79, II

I start to walk around 7:15 a.m.

8:10 More horrible bills flying overhead with loud single and double notes. Then perch in trees. Utter a few more, obviously lower intensity, single notes. Conrad says that there were 4 Rhinoceros Hornbills involved. Possibly 2 pairs. Possibly some hostility.

COMMENT: From the little that I have seen myself, and from reading the published literature, it is obvious that there are a very great many (both individuals and species) large & augurious hornbills here. Richer than in Liberia or Gabon.

Stop 10:15 a.m.

Going to walk along path to entrance this afternoon.

4:06. Edge river. See single Chestnut-naped Forktail. Returns with series of high pitched "Zeee zeee zeee . . . " Notes. According to the Annings, this small kingfishers here (especially the Rufous-bellied, Ceyx rufidorsus ?) sound like this Forktail. Presumably Alcedo-like.

Nothing more of relevance

February 6, 1979
Bobcrude

Trying up hill Trail once again. There was rain last night but it is clear now. Usual morning noises from 6:20 onward. Arrive area where Redbeard seen 2 days ago 6:30 a.m. No bird visible now.

Something utters several series of rather sharp "Pink" Notes. Possibly a squirrel (Ratufa ?).

I am going to start to wander 7:00 a.m.

Forest is dripping wet, with some mist.

8:15 a.m. Following lower side path. Come across large mixed flock. With turacos, drongos, orioles, bulbuls, etc. But apparently no Redbeard

9:12 a.m. Another mixed flock. Many flycatchers Again no Ceraciiformes

Stop 7:45 a.m.

Three aftermen agree to walk up hill on other side of river. Start 3:00 p.m. Very hot and still. Looks as if it might rain later.

3:28 See single Dollar perched high in dead tree above canopy in distance. Flies off, out of sight.

Lots of thunder 3:38. It probably will pour in a minute.

NOTE: Forest on these steep slopes seems to be denser than mature forest on BCI

Rain 3:48 Continues until 4:30 After which forest is dripping.

NOTE: We saw several otters single birds perched high in dead trees yesterday afternoon. They probably were Dollars too.

February 7, 1979
Boboroh

It poured rain last night. Stops at dawn, but we start out late. Across river

6:45. Beginning uphill path. Many Antbirds seen off with "Paa boa". Could say it has white wing stripe. Must be Black cap. Area is secondgrowth.

7:30 Upbill Hornbill sounds in distance. Rhinoceros Single notes irregularly spaced

Reach top of trail 7:50

Trumangs are in full voice. Rhinoceros Hornbills join in with a few single hoots. Then fall out. Wedgebills join in.

8:16 Apes silent for the moments. Near Helmeted Hornbill ("mother in law bird" — hysterical laughter at end) in distance. Not overlapping anything

9:32 Rhinoceros Hornbill flies from tree to tree. Utters deep trisyllabic notes "Uh-Kuh-Wuh" Rather hoarse

Steps 10:10 a.m.

Go up river for picnic at midday. On way back, 2:15 p.m., see flight between 2 species of Kingfishers. One Ruddy Kingfisher, Halcyon coromanda, and 1 ♂ Blue-banded Kingfisher, Alcedo euryzona. I saw part of the incident; the Awlings saw the whole of it. The Ruddy attacked the Blue-banded. Dived at it. (This is the first attack by a Halcyon on an Alcedo that I have ever seen. Perhaps the Blue-banded was flying away from us, and inadvertently "trespassed" into the Ruddy territory.) After the attack, the Ruddy flew back up into dense edge vegetation, 15-20 ft above river. Out of sight. The Blue-banded flew on to perch 1-2 ft above river and 20 ft downstream. Uttered typical Alcedo Twitter in flight. "Zeezeezeezee...." Landed silently. Sat for a minute or so. Apparently no display. (Certainly no Wingspread. Is Wingspread lacking, or very rare, in all Alcedo spp.?) Then the Blue-banded flew on Twitter downstream, out of sight. The Ruddy never re appeared while we watched.

According to the Awlings, the Ruddy also vocalized while attacking. Something very like the Twitter of the Blue-banded, but somewhat lower in pitch. This conforms with the description by Smythies, cited in Kung et al. (" a shrill high-pitched note").

COMMENT: Alcedo Twitters must be homologous with the Chatters, "Chak" Notes, etc., of typical Halcyon spp. It is nice to know that the Twitter of the Ruddy is hostile (aggressive).

Why is the Ruddy so high-pitched? Could it be mimicking Alcedo? Does the Ruddy compete with Alcedo (more serious than do other Halcyon)?

NOTE: The Awlings say that White-throated Kingfishers occur in the Goodyear rubber plantation near Siantar. This seems to be a new record. Van

Steven says that the species is absent from the Sunda Islands. Presumably it has invaded Sumatra recently, as a result of increased cultivation and forest clearing.

February 8, 1979
Sumatra

Go from Belerok to Medan in morning. Then on in direction of Siantar and Lake Toba after lunch.

Beautiful rice fields as soon as we leave Medan. Also telegraph wires. But no kingfishers perched on wires.

5:25 p.m. Goodyear plantation. See single White-throat on high wire by RR. Unmistakable Blue-off with "Kak" or "Chak" Notes

See at least 3 more individuals, all on high wires, further down road in next 15 mins.

NOTE: According to the Smith's (Graham & Elaine) the White-throats have been here ever since they themselves arrived (approximately 2 1/2 yrs ago). But van Steen (1977), who says that the species definitely does not occur in Sumatra, visited the plantation not long before. So the invasion - if such it was - may really be relatively recent.

NOTE: Also according to the Smith's, the other kingfisher seen around here is the Chlor. This area is quite far from the sea. C.S. Chlor has a wider habitat range in Sumatra, where White-throats are rare and/or recent, than in Thailand, where the 2 species have been in contact for a long time.

February 9, 1979
Sumatra

Going to look around Smith house

A moderate amount of bird noise ca 6:15 a.m. Apparently not the breeding season here (either)

6:58. Big small stream. Bird flies into tall tree. With many loud harsh "Kaa" notes, developing into "Doublets". Then sits in tree uttering semi-stereotyped short series of 4-7 "Kaa" notes. First notes sometimes "Intro", i.e. shorter and less harsh than others. Notes within each series decreasing but not accelerating. The performing bird is invisible, but it must, I think, be Chlor.

Then hear Chlor-type Doublets by another bird in distance.

Then silence 7:07 a.m.

Then short series start again. Finally see bird. It is a Chlor. Perched 15 ft up small tree. Utters series after series. Usually 5 notes per series. First notes are sharper than later notes, but constant, not softer. Then a second bird flies in. Utters Doublets in flight. Lands silently 5 ft from first. No greeting. First bird flies off. Utters Doublets in flight. Lands in large tree out of sight. Utters more short series "Kaa"s. Second bird flies over in same general direction. Also out of sight

Then birds do seem to be highly motivated

Stop 7:15 a.m.

NOTE: The Smiths say that a Chlor has nested in tree near their house. They also think that the species may nest twice a year here.

The Smiths also say that the local White-throats often go into the Rubber. This would appear to be a difference from Malaya. But here the local birds have no alternative. There are no old palm plantations nearby.

Later in morning, driving to Piarco and then on to Parrapet (Prapet-Penapet) Noticing Jacanas on wires.

Does Chlor ever sit on wires?

11:15 a.m. No signs of Ciconiiformes anywhere near ricefields (snow)

NOTE: Why are there any Alcedos visible? Here does not seem to be anything comparable to the rice-field subsistence killing (countata ?) of Senegal here in SE Asia. Why? Because the local people harvest the fish? Or do not Alcedos need deeper and/or clear water? (Cf south India)

Walking around Sawarna Island in Lake Toba in late afternoon. Natural vegetation largely cleared from area around village of Tuk-tuk. No Ciconiiformes noted. Although other birds, commensals of man, are active and noisy.

Thurs, 5:41 p.m., narrow valley with trees on sides, small paddies in center. Single Chlor flies into tree, 6-10 ft up. Sits silently.

COMMENT: Chlor seems to be common in this part of Sumatra. Presumably it is absent from Bohorok area (Aveling did not visit there). Presumably, because region was under really heavy forest. Chlor seems to be commensal of man away from coast in Sumatra.

February 10, 1977
Samosir

Walking around east side of island in morning. There seem to be normal fishing birds around lake. No Pied Kingfishers. No gulls or terns. No cormorants. Presumably because lake is so steep and deep.

Speak of the devil! 9:00 a.m. Approaching Ambarita. See single White Throat flying from perch to perch in scrub of rocky headland. Uttering many loud harsh "Chak" or "Tak" notes.

Later on, 9:21 Waterfront of Ambarita. See single Alcedo. Perched on 6 ft pole in water. Does lots of HB and U-D TF's (not coordinated). Also fishes. Not successfully as far as I can tell. Apparently silent.

10:40 a.m. Walking back. Area scoured thoroughly in front where White throat seen earlier. Pair of Chloris seen into trees on steep slope above water. Then seen perched within tree. At least one utters stern, hoarse, not very loud Rattle-type note. Then Rattle-type noise developing into soft muffled "Kaa Kaa kaa ..." Notes. Then one flies off with regular loud Mourning Cloak-like - Doubt if seen. Heard others. Out of sight.

11:00. Much further on, hear more Chloris Mourning Cloak-like - Doubt "inland" near dry rice fields.

11:40 Then Long notes Chloris more oyster Catcher notes near village

Upon hills in afternoon Then Chloris Mourning Cloak-like - Doubt if seen near village fields

February 11, 1979
Sumatra

NOTE: Level of Lake Toba is approximately 900 m

We leave Samosir for mainland in morning. Then drive through pine plantations along shore of lake. Finally on to Berastagi. No Coraciiformes seen.

In afternoon go driving around Berastagi area. Beautiful montane forest. But again no Coraciiformes.

February 12, 1979
Berastagi

This is highland country. Conifer plantations. As well as montane forest not far away. Going to start walking from hotel in general direction of Mt. Sibayak (Mt. is 4 hrs away by foot) 6:20 a.m.

Difficult to move around as there are barbed wire fences.

Only a very moderate amount of bird noise

Getting up without by 8:15 a.m. Too much bamboo as well as pine. Few walk down highway. A few irrigated fields but no kingfishers.

Go exploring again in afternoon. Road to Baris pole etc.

4:39 p.m. See single bee-eater flying from bamboo edge cliff high above rice fields. Obviously Chestnut-headed (M. leschenaulti). Apparently alone. Males usual bee-eater tail movements. Fast, slight, vertical flat wer distinguishable, V-D or D-U.

Then one definitely D-U immediately after landing.

Actually, there may be 2 inds. here. But they are sallying from perches scattered far apart from one another.

Apparently quite silent.

Go on. Then back 5:22 p.m. Bee-eaters have left. Getting windy and cool.

February 13, 1979
Borobudur

Going to valley near Dawu at base of mountain. Arrive while it is still quite dark. A lot of bird noise. Walking along path between rice fields and slope covered with scrub and forest. Heavy mist still above us.

Drongo already flycatching by 6:25 a.m.

6:36 Horrible sounds in distance.

Lots of small ponds edge rice fields. But no kingfishers.

7:53 Small bee-eater flies overhead. Definitely hawking for insects. Flies back and forth, round and round. Quite high. Fluttering, rather loud "Tuk" notes. Irregularly in snatches and doublets. Unfortunately can't identify species. Flies away and disappears without perching.

Plotting more by 8:00 a.m.

Go to Lingga in afternoon. Then on to various other sites. Still no Coracii formes. Note. Shrikes are also rare or absent here. I.E. large insects must become rare only a few thousand ft. above sea-level. Is this the same as in the Neotropics? See Janson.

NOTE: According to Powdra, this is beginning of rainy season

February 14, 1979
Sumatra

Back to Medan in morning.

9:30. In Cow lands. See White-throat in cage by road. Apparently caught in rice fields 1/2 km away. At place called Harmoriam. Bird looks rather ruffled but still alert. Being fed bugs.

The species seems to be (already) quite widely distributed in Sumatra

NOTE: this area is about 25 km from Medan on Berastagi-Medan Road

We buy bird and release it approx. 5 km down road. Near Rice fields

NOTE: Actually, the part of the reserve at which we stayed with the dwellings is called Langkat. It is part of the larger reserve called Gunung Leuser. The nearest village to Langkat is Bukit Lawang. Bohorok itself is only the nearest town.

(1)

Xerox & returned) Coraciiformes

Wrong Pt

October 14, 1966
Madang
Jais Aben Resort

Arrived last night. Heavy rain. Apparently rains started a few days ago. Still raining 5:30 a.m. today. All still dark
Left for D.C.
Starting out 6:15. Very gray. Fairly heavy drizzle.
Walk around until 7:00. No Coraciiformes visible in field. Nothing on wires. But one of the staff has a young Rufous-bellied Kookaburra (Dacelo gaudichaud). Very calm and quiet while I watched it. But the owner (Viviane) says that it is quite vocal at time. Beggerig (All closed, vents illegible, no 9). Plus "conversational" notes (Like Micronesian?)
Rain more or less stopped 7:35 a.m. But still gray dull.
I go into town at mid-day. Still raining intermittently. No birds of interest. Not even on wires (Wires are numerous here. But they are high) Most of the local vegetation is coconut, some cacao, some mangrove. All, unfortunately, very clean and manicured.
Some sun after lunch. Then more showers.
Walk along road 4:30-6:00 p.m. Very gray and dark but not actually raining. Nothing of interest except one possible glimpse of single Halcyon type. Flies into palm. With single harsh note.
COMMENTS. I suppose that all the Australian migrants have left by now (via guide book). I also suppose that Rufous-bellied Kookaburra as breed under resident (via the captive young mentioned above).
Still, Kingfishers seem to be remarkably inconspicuous here.

October 18, 1986
Jais Aben

Heavy rain before dawn. Rain finally diminishes. Start out ca. 6:30 a.m.

Almost immediately see single kingfisher perched on wire 15 ft up. Silent and alone. Flies away silently, disappears. Species probably chloris.

Then walk for a long time, through very mixed vegetation, including recent growth. Nothing of interest

October 19, 1986
Jais Aben

No rain this morning. Starting to get light 5:30 a.m. Some D.C.

5:50. See single kingfisher on wires same place as yesterday. Silent and alone. The bird does seem to be chloris (I can see dark, white silhouette, but it certainly has light reddish band). Flies away in same general direction as sea. Quite silent in flight.

A few seconds later, hear peculiar sounds from direction of palms. Series 2-4 notes. Guttural "Kurra kurra ..." These could be coraciiforms. Bird is invisible.

6:43. Walking along side path. Area of mixed second growth vegetation with occasional palms. Not very tall. Notice occasional "openings" of grass, fern, etc. See single Rufous-tailed Kookaburra ("RBK"). 20-25 ft up in edge tree. Silent. Apparently alone. Then flies away into another tree 30-40 ft away. Then I begin to hear series of loud, slightly metallic "Kow" notes. Series of variable length (20-30 notes approximately). But rhythm is very regular. Quite rapid. Intervals more or less even

Then another bird starts to vocalize in same way. At first the 2 birds are close together. Then they separate, continue to vocalize 100 m. apart. Months series are overlapping (or non-overlapping) apparently at random. Occasional stretches of alternation. No complete synchrony of individual notes. All vocs from 10-20 ft up in trees. The birds are quite invisible. But I am fairly certain that they are RBK's

Some variation in tonal quality of notes. Some are clearer than others.

The 2 birds remain vocal for at least 15 mins. Then gradually fall silent. Everything quiet by 7:05.

7:13. Further down road. Some kind of vegetation. Hear a few more series of "Kow" Notes apparently by same species. Some (at least) of the notes have trace of rattling undertone. Again performers are hidden in trees.

Walk slowly back to hotel without seeing or hearing anything more of interest. Arrive 8:00 am.

COMMENT. Flycatchers in general are either rare and/or inconspicuous around here.

This afternoon I go to Deane Christensen to work with her young RBK. The animal seems to be developing well. Plumage is in good condition. Tail is almost grown. Bill seems to be becoming lighter. Very tame. Note tail is brown rather than blue. This may be a juvenile character. Or it may indicate that the bird is ♀.)

The bird utters occasional soft "Wheezes". With a "Trilling" component. Sort of conversational (soft conversational notes may be common among Daedalonia flycatchers. These sounds, at this stage of development, do not seem to be FB. This afternoon, the young bird uttered the sound after being fed. Presumably the pattern is purely "social" now. In any case, I recorded two examples.

According to Deane, the notes were louder when they first got the

Corvallis, Oct. 19, 1986, III

bird. Perhaps real FB kitten???

The sound is peculiarly ventriloquial. Utterer while the bill remains firmly closed. There is not even any visible movements of throat. But the animal often (usually? always?) does CR before hand. No traces of S or CO or anything.

Tail "Wagging" is common. Not (particularly closely) associated with Breezes. Probably basically U-D. But movements often seem to be symmetrical, in both form and timing, in both directions.

October 20, 1986
Jacis Aben

Going to walk along same path as yesterday morning.
Start out 5:30 a.m. Sky is fairly clear. Lots of small chickadees DC.
The local Arbor is not on usual voice. Then suddenly appears 5:41.
Flies in silently. Just sits silently. Looking from side. Then flies away.
Still silent. This bird would seem to have very regular habits.
But it certainly is not in courtship or territorial defense phase.

Same area where RBK is were seen yesterday morning. Dark bird.
Flies across road 6:20. Silent. Lands high in tree. Out of sight. Then
utters a short series of "Kow"s. Intervals between notes fairly long.
Then everything very quiet.

Then more "Kow" Notes down road. See bird. Apparently alone.
Definitely RBK. But I can't see color of tail. The bird is perched 25 ft up,
rather exposed in tree with rather sparsely scattered clumps of small
leaves. (This is same species of tree in which I first saw bird yesterday.)
Bird sings at least 25 phrases at irregular intervals (irregular between
phrases). Each phrase consists of 4-12 notes. All typical, rather clear,

"Kows". Distances between notes within phrases all very regular indeed. Sitting posture generally "normal", not ritualized. But the bird flicks bill diagonally upward with each note. I think that there is NO wing or tail movements. Finally the bird flies away, silently.

This certainly looked like advertising song. But no one responded at any time

I tried to do some recording. I don't know how successful.

Sometime later, ca. 7:12, there are a few more phrases of "Kow"'s not far away. Probably all these sounds have been by same individual. If so, it is singing frequently.

7:20. Starting to pack up for slow return to hotel.

Some more "Kow"'s later as I go. RBK's are not common in this "developed" coastal region!

Re sign of Chlor. Reach hotel 8:a.m.

COMMENT: After a few hours of observation here, and after reading some of the obscure lists and guidebooks, I have the impression that the local kingfishers are remarkably segregated by habitat preferences and/or migration habits and/or diurnal rhythms. Thus, for instance, Diamond noted only 3 species around Jacquinot Bay: Alcedo atthis, Halcyon sauropraga (the White-headed Kingfisher), and, of course, the RBK.

Before coming here, I had expected that Papuan kingfishers, simply because there are so many species of them would have evolved a great many peculiar interspecific social relations. This does not seem to be true so far.

Perhaps there are so many species in Papua because each species is so "narrowly" specialized??

Obviously the greatest diversity of kingfishers in Papua is in forest.

Why have I not seen or heard Dollarbirds? The environment looks suitable.

Coracii, Oct. 20, 1986, III,

Going to start walking again today. On another patch (2), different from that one I have been following in morning. Weather is clear. It is still hot, even though there is some breeze

But, in fact, breeze does lower. Everything very quiet. I come back early

October 21, 1986
Jais Aben

Going to try around hotel once more.
Nothing of interest

Going to patch of "forest" later in morning. Area is second growth mixed forest in Jogel River valley, 9:45. Hot and airless. Clouding over. But still a fair amount of bird noise

10:05. Hear single RBK perched 30 ft up in comparatively tall tree sitting semi-exposed in shade. Definite adult (light bill). Tail is brown, i.e. the bird is ♀. Just sitting and looking. No wing or tail movements. Seems quite tame

NOTE. Light bill and white collar quite conspicuous in shade. But the general effect might (also) be disruptive.

10:34. Much further along road. Quite sees another RBK. Flies away when car stops. Silent

11:05. Another area. Woods of trees with thin branches. Hear one series of notes by a Kookaburra, presumably RBK. Probably the same as, or closely related to, what I have been calling "Kow"s. But these notes definite, were slightly guttural "Kroo kroo kroo ..."

Arriving back at hotel 12:30 p.m. See single Chloroux wire. Some considerable distance from where a Chlor was seen on previous days. Silent and alone

Coracii, Oct. 21, 1986, II

(4F)

Going out again after lunch. Down along road to sea. Environment is much the same as near hotel (although several miles further on).

1:12 See 2 Chlors perched on wires, 50 ft apart. Then a third flies by. One of the perched birds follows. 2nd perched bird follows. All 3 birds silent so far. Then there is a burst of hard, rapid "Kakakakakaka..." series 3-4 secs. All birds out of sight. Everything quiet. I did not manage to record the birds this time.

Then several series of Triplets by at least 2 birds.

Then see silent aerial chase involving 3 birds. Silent. Apparently unterritorialized. Then more Triplets. 2 birds, close together, overlapping one another. This would seem to be a mild dispute between a pair and a neighbor.

I may have recorded part of the overlap between 2 birds. But nothing else. The highway here is full of people and traffic.

Everything quiet 1:45. Going on.

NOTE: It is my impression that the Triplets heard this afternoon were rather "buzzier" than those that I have heard in other parts of the overseas range of the species.

COMMENTS:

My guides today seem to agree that RBK is the dominant - at least the most conspicuous and/or easily found of the local kingfishers. The species likes what is called, locally, "forest". Perhaps especially woods of thickly packed trees of small trunk diameters. Interspersed with larger trees, and perhaps occasionally palms.

The Chlors obviously also are common. Perhaps nearer to the sea, on the average, than are RBK's. They also seem to be quite willing to use coconut plantations and other domesticated gardens, as well as second growth scrub and forest. And, above all, they like wires!

So far, I have never seen RBK's and Chlors in precisely the same areas.

Coracii, Oct. 21, 1986, III

Ever at different times. Are the two species excluding one another quite rigidly?

How does the size difference between Chlor and RBK compare with the difference between the White-throat (*communis*) and the Stork-bill (*cajanus*)? What size difference is necessary for two species to coexist?

October 22, 1986
Jais Aben

Going to walk down to "original" RBK site this morning. Arrive 5:50 a.m. Just full light. Miscellaneous DC. But apparently no kingfisher sounds.

First "Kow" Notes 6:25 One short phrase

More series "Kow"s ca 6:30. Nothing very excited or exciting. From different sites. Possibly different individuals. No overlaps. Again I am struck by the regular spacing of notes within a phrase. But some phrases are more rapid than are others.

Suddenly a phrase of "Kraa kraa kraa kraa" Then more "Kow"s. Still no overlaps. Certainly two wds. involved. Perhaps mates answering one another? Birds obviously perched relatively high in not very tall trees.

Suddenly, 6:42, one wd utters "Kow kow kraa kraa kraa kraa kow kow..." series. Does not change perch with change of notes.

Everything (except crows) quiet by 7:00 a.m.

Starting back 7:30

One series of "Kow"s as I pass by. Quite possibly reaction to my presence. (Further) indication that pattern is hostile

According to the draft of the CRI "brochure", the Dry season here is is roughly June-October. The Wet season is before Christmas until May.

Coracii, Oct. 22, 1986. (P)

Extremely variable. Especially, apparently, in recent years.

October 23, 1986
Jais Aben

Going to start early this morning, before dawn. Leave hotel 4:30 a.m. To usual RBK area.

Some sounds in full dark. SEE BELOW.

5:31 a.m. RBK's begin. First one series of clear "Kow"s. Then 2 series of "Kraa"s by another bird. Then more series of "Kow"s. Eventually 2 birds bringing "Kow" series 10 m. apart. Many overlaps; no precise synchrony. Some peculiar bisyllabic effects. "Ka-wa"s. I think that these were not uttered by single birds. Rather they seemed to be partial overlaps of "Kow"s by two different birds.

Main outburst of song over by 5:45. But still occasional series of clear "Kow"s. And one more series of "Kraa"s (or "Kraaow"s) likewise by 2 different birds involved. At least 100 m apart (now). One utters only "Kow"s. The other utters both "Kow"s and "Kraa"s.

For the mid. utterings only "Kow"s, hitting 25 ft up in tree with small, sparse leaves. Flicks bill upward with each note. No wing or tail movements.

All birds silent by 6:04.

Obviously these RBK's vocalize before starting to feed. Quite like Lanius and Melospiza Canarinus.

ADDITION: early morning data.

As soon as I started down main road, I started to hear distinctive "songs". Perhaps could be Transcribed as "Whee duh weee" More or less ---. Rather musical whistles. Repeated at short intervals. Repeated by different individuals as I walked along path. But not, I think, with overlaps

between neighbors

When I get to RBK area, there is at least one ind. uttering same type song from a tree which is visited by RBK during the day (although, of course, there was no sign of the local RBK's at the time) Again repeated at very short intervals. Continuing for some considerable time.

Then I begin to hear occasional series of 4-5 pure descending whistles, notes getting progressively shorter. Ca. 5:20 a.m. Beginning notes could be transcribed as "Whee" or "Whee-oo".

The quality of these simple series of whistles was that of the more complex "Songs" heard earlier (and later) They seemed to be coming from the same place. They did not overlap "Songs".

Both types of vocalizations stopped some minutes before the local RBK's began "Kow"s.

What was this all about? From the (not always concordant) accounts of Coates, Beebler, Diamond, etc., probably were uttered by Hook billed Kingfishers (Melidora macrorhina) The simpler series of whistles probably were uttered by the same species Although I cannot quite discount the possibility of the Shovel-billed Kingfisher (Clytoceyx rex).

Going out again late in afternoon. Leaving hotel 5:30 p.m. Arrive usual RBK area 5:45. Everything very quiet except for frogs and crows. Still full light, although evening is beginning to draw in fast.

6:05 p.m. Not a trace of RBK notes

It is getting noticeably darker 6:25. The frogs are also noticeably louder. It probably will not be possible to record any bird sounds. I will try again tomorrow morning.

The local birds are not in (full) breeding condition. Note that Hook-billed Kingfishers are supposed to be active during the day the breeding season. They are not active now!

Coracii.

(11)

October 24, 1986
Jais Aben

Leave house early 4:30 a.m. in direction of usual RBK area.
There are no "Longs" of presumed Hookbills along main road. This is in contrast with the situation yesterday morning. Incidentally, the fact that 2 or more individuals were vocalizing yesterday, apparently in the same ways, indicates that whatever may be peculiar about these "Longs" is dialectical, not individual.)

Reach RBK area well before. At first, there are no kingfishers sounds.
Then a presumed Hookbill ("HB") begins to sing, probably about 5:05. Longs just as yesterday. Many phrases at short but somewhat irregular intervals. The bird continues until 5:25. Then stops completely.

After 5:15, some phrases are abbreviate sometimes two whistles without terminal doublet. Sometimes one Whistle with doublet. I think that I also heard a few single Whistles

At the beginning of the session, there seemed to be another individual singing in distance. As far as I could tell, the longs of the two individuals did not overlap one another

The bird was not probably sang from several different trees. But all close together

This type of song is remarkable in being ventriloquial, at least to human ears. How does this fit in with Gene Morton's hypothesis?

First RBK sound 5:39. Two "Kow" Notes. Then bird flies to adjacent tree, utters series of 4-5 harsh "Kraaa" Notes. Then back to first tree, starts singing in typical fashion. Series of "Kow" Notes. Number of notes per series is extremely variable. Some series are long. Then a second bird begins to sing nearby. 3-20 ft away. Lots and lots of chattering. The behavior of the two birds was not identical. One bird uttered very clear

notes. The notes of the other ind. were less clear and perhaps lower in pitch. (This all on tape.) Most duets were initiated by the same individual. I shall call this bird "Prime". The other can be called "Second". The Prime was the bird with the (usually) clearer notes (although I think that it was the one who uttered stories of "Kraaa"s earlier).

There were no more series of "Kraaa"s alone. But there were a few harsh notes in series which were otherwise composed of "Kow"s. Once at least as the initial note. By second, I think

I have no idea of the significance of the difference between "Kraaa" and "Kow".

I got a good view of Prime singing. Conventional sitting posture. Usual upward flicks of bill. No wing movements. But tail was not steady. It ticked slightly upward with each note. The movements were not conspicuous. Probably not a display. Perhaps a simple "mechanical" effect of the effort needed to produce the Bird notes

Second gradually stopped singing. Prime continued for a few minutes more. Then also stopped. Everything over before 6:00 a.m.

On my way back I saw two Halcyons on wire. Process where I seen an individual on previous days. Standing alert. Then there are a couple of supplants. Apparently silent (and I was fairly close). But once, the (or a) supplanter stood with extreme CR for a second or so after landing.

PROBLEM. Eventually one of the 2 birds flew away. And I thought that I saw a streak of light (not really white) in wing. Of course these are the Halcyons that I have called "chlor" on previous days here. Could I have been mistaken? Is the species H. macleayii, the so-called Forest Kingfisher (which does not live in forests)??? I don't think so. The resident race of the Forest is supposed to be blue above. While these birds look blue-green. (Of course, there are always tricks of light.) The

race that breeds in Australia and then migrates to New Guinea is supposed to be blue-green. But a photo in Coates shows considerable buffy below. The birds here do seem to be pure white below. And the season is wrong for an Australian migrant.

Incidentally, Coate's maps indicate that neither species occurs along the north coast in this area!

I wonder which species I recorded the other day?

Going out to look for old Japanese airfields after lunch. It gives me a chance to look at the countryside. Only it is dreadfully hot and still. Still a few bird sounds 2:00 pm. But no kingfishers (or broadbills for that matter).

2:22. Patch of good forest in middle of overgrown pasture. Hear several series of "Kow" notes in distance. Also some "Krara"s. Sound like RBK. NOCA. Then complete silence.

COMMENT: Chloroud the Forest must be as little segregated from one another as any two kingfishers in New Guinea.

October 25, 1986
Jon Alen

I think that I will try to explore some other or new side paths. It rained heavily last night. Rain stopped by early morning, although there is still lightning and thunder in distance. I will try to start from hotel 5:00 a.m.

No indication of kingfishers along main road.

5:32. Almost full light. Beginning new side trail. Hear 2 series of "Kow" notes presumably by RBK. Not very excited. Then silence.

D.C. essentially over by 6:00. Everything very dull. Starting back 6:15.

6:28. Hear several long series of "Kow"s. Especially RBK. Singer is invisible; but obviously approximately 20 ft up in small tree. It is answered by

series of "Kew" s by another bird, several hundred m. away. The two birds do not overlap one another. First bird shuts up. Second bird continues occasional phrases. Then also shuts up.

6:35 One series "Kraaa" Notes by first bird.

6:50 No Halcyon on wires

Going out later in morning. Weather is very hot and heavy.

Three no Halcyons visible at 9:50

October 26, 1986
Jon Olsen

Going to "old" RBK site before dawn. Starting ca. 4:30 a.m.

First "Kew" notes by RBK 5:25. Just after HB stops singing. Still very dark. Then a period of silence. Then real singing begins. Fewer less as usual. Not very excited. Some chattering. Primo and second. No "Kraaa" Notes. Second sometimes utters notes in faster rhythm than does Primo. Then another period of silence.

Suddenly, 5:35, there is a loud, hard, fast, wooden Rattle. I catch glimpse bird flying away. Silence. Then a few "Kew" s in distance. Is this a territorial defense? Of course, I did not catch Rattle on tape.

More silence. Bird is back in usual tree 5:37. A few "Kew" s Then silence. Long continued.

This species does not chatter (or laugh) frequently at this time of the year!

Going to pack up 5:48.

6:10. See Halcyon on wire usual place. Silent and alone. Flies away without my being able to see wing pattern

A few minutes later, close to Lodge, see 2 Halcyons on wires, sitting quietly

Two-three feet apart. Do a little preening. Then one flies down to ground. Back immediately with insect in bill. I do see flash of white in wing as it lands. Its partner does CR and shows a series of Bill-downs (almost like pecking in the air) All quite silent. Both birds sit. Then fly away (presumably to another perch 200 m down river) Have three white in wings as conspicuous. Two shrill Dryglets in flight. "Insectivorous Insectivorous"

I am now certain that all the Halcyons I have seen in the resort compound are Forests.

Birds of the species do look rather small and more "delicate" than the real Chlors I have seen in places apart from New Guinea

NOTE. It is possible that the Forest Kingfishers here are members of the "migrant" race after all. According to Beehler et al, "Resident race inhabits savanna. Migrants (March-October) will occupy any open areas: gardens and edges of playing fields."

Later in morning. Working around Catholic church. First see one Halcyon ca 25 ft up in tree. Then bird utters several "Kraa" Notes Coleman not RBK - tone is different - higher, less guttural). Then see pair 15-16 ft up in small trees. Flew around silently. One of the boys here, Paul, swears that all 3 birds are Forests. (The white in wings.)

Paul also says that he has seen a pair fishing in salt water from small tree edge of bay. If the competition between Forest and Chlor, must be strong.

We continue looking for more Kingfishers. Nothing on trees. But boys (Paul and Martin) say that Forest Kingfishers often are abundant. We do not actually see any birds (it probably was too late in the morning - see below). But the three sites themselves were interesting. One was a plantation of cocos with cacao bushes (probably fairly young) underneath. The second was a coco plantation with small (10-20 ft) teak trees. The physical forms of the vegetation of the two plantations were very simil-

ar. Essentially 2-layered. The third site was different, a row of mixed scrub and small trees (no mangrove), with a few coco palms, along sandy sea beach. Martin says that the Forest Kingfishers fish in both the sea (there was some surf today) and in an adjacent fresh water river. All this travelling took place from 9:20 a.m. to 12:05 p.m.

Paul also said that a pair of White-headed Kingfishers nested on an island ("Long") in the harbor near resort last year.

Relations among Chlors, White-heads, migrator, Sacred Kingfishers, and migrator and resident Forest Kingfishers must be tense.

Going to look for local Forest Kingfishers in resort compound this afternoon. Start 3:30 p.m.

Immediately see 3 birds on wires. Despite some supplanting and hovering. 2 birds fly away. One bird utters 3 notes "Kree kree kree". Harsh but fairly high pitched. Obviously kestrels. These notes obviously the same as, or closely related to, the notes transcribed as "Kraaa" earlier today. They did not seem to form a really structured triplet. All the same in pitch and length. Unlike notes of "real" Triplets of Chlor elsewhere.

Remaining bird flies away. Hear "Kree kree" in distance.

Then bird back. Letting quiet 5:36.

Hear short series of BBK "Kew" notes from area of coco and noisy scrub. At least several hundred m. away. But the two species certainly are in earshot of one another.

Gusts flies are silent 5:42. Sun is now going down behind clouds on horizon. Light is just beginning to fail.

NOTE: Pizzey's brief accounts in the "Field Guide to the Birds of Australia" would suggest that the habitat preferences of populations of Malayan in Australia are much the same as in New Guinea.

October 27, 1956
Jan Allen

Going to try to work with the Forest Kwiaflukers in component. There was rain last night but it seems to be clearing up before dawn.

Start 5:35. Almost full light. 2 Forests already on wire. Settle quietly 2 ft apart. Then flies off to adjacent scrubby plantation. And I hear 2 "Tuctoocatoree" phrases from area. Birds presumably feeding.

One vocal. back 5:48. Presumably ♂ (has complete white collar) lights. Then flies to palm frond. Apparently gets something small. Back to wire immediately. BW's (almost "BNG"s) repeatedly. Then sits, looking at ground.

Then makes feeding flight to grassy lawn. Unsuccessful? Back to wire. Sits. Then flies away.

All feeding attempts are silent.

Do mates feed separately?

A bird is back a few minutes later. Sits. Then flies away. And I hear burst of Triplets from direction of incident tree. Of course, I do not manage to record them. Apparently Triplets, here and now, are being used as "greeting". Although presumably still largely hostile.

Certainly no "advertising" song at the moment. Birds presumably not breeding. Why not, with all the migrants absent?

DC about finished 6:05.

Single bird back. Just sits. Shakes out wings (wet?). Does a little preening. Sits. Looks at ground. Changes perch. All silent. Preens some more. Then flies off again. Stays away a long time.

6:26. Sudden burst of BBK "Kew" series in middle distance. Some ducting. All NOCA. (Incidentally, all the Forest Triplets heard earlier also were NOCA. But calls are so infrequent now that one cannot ascribe significance to the

absence of overlaps) RBK continues, off and on, for some minutes. Then silence.
Stop observation temperature 6:45
Nothing visible at 8:45. Hor at 9:20-9:30 (I do, however, hear "Kow" series by local RBK) Birds still not visible 10:20
Going out again 4:30 p.m. The veil has come up and the weather is a little bit more bearable.
One Forest sitting quietly on wire. I can see that it really is blue on back. Then it flies away silently as lawn-mower passes by
5:21 Jungle Forest lands on wire. Sits. Another Forest flies by. There is an aerial chase. Apparently hostile. But quite silent. Both veer off & away.
Back 5:26. Sit on wires 5 ft apart. Both quiet. Some preening. Ignore Willie Wagtail which lands between them. Wagtail supplants one of the Forests. The Kingfisher does not resist. Flies away silently. Followed by its partner also silent
I am stopping 5:38 p.m.